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Understanding the walking behaviour of older adults in walking groups

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Declaration

In compliance with the regulations of the University of Edinburgh, I declare that this work has not been submitted for any other degree of professional qualification and the author of this study is undersigned.

…… ……..

Nicola Laing Date

Acknowledgements

I have many acknowledgements and thanks to make in relation to completing my PhD. First and foremost I'd like to express my thanks and gratitude to my supervisors Ailsa Niven and Sam Fawkner. I would not be here, about to complete without you both. You have been supportive, encouraging, patient and maintained a belief in me that I could do this. The three of us had no idea quite what a journey this would turn out to be. I was diagnosed with breast cancer three months after starting my PhD. I took a year out for treatment and returned part time, still undergoing a series of surgeries. Having received my five year all clear, I was diagnosed with secondary breast cancer just under a year ago. My PhD has been very enjoyable at times and very challenging at times. I have somehow managed to keep going. I could not have done it without your constancy and commitment to me and what I was trying to achieve. It has been challenging for all of us at times, but we are a team. I can't thank you enough.

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Why we walk

“Above all do not lose your desire to walk. Every day I walk myself into a state of well-being and walk away from every illness.

I have walked myself into my best thoughts and know of no thoughts so burdensome that one cannot walk away from it.

But by sitting still, and the more one sits still, the closer one comes to feeling ill.

Thus if one just keeps on walking, everything will be alright”.

Soren Kierkegaard – Danish philosopher, 1847

Abstract

Background:

Older adults are one of the least active groups within the population. Despite well documented health benefits of being physically active, older adults in the main are not sufficiently active to enjoy such health benefits. Walking is the most popular form of physical activity (PA) for older adults, and is the most promising form of PA to reduce inactivity. Group based walking is also known to be popular with older adults because it offers enhanced social opportunities. Understanding why older adults start and especially continue to walk in groups is important to effectively promote walking in this age group. Paths for All (PfA) is a Scottish charity that champions walking, and was the practice partner for this thesis. Overall the three studies in this thesis aimed to identify the individual, social and environmental factors that are linked to the initiation and continuation of older adult group walking.

Methods and results per study:

Study one: a qualitative systematic review was conducted to identify individual, social and environmental factors linked to the initiation and continuation of older adults involved in group walking. From the 14 studies included in the qualitative systematic review, the review found that group walking is globally popular among older adults within their 60s to 80s, in groups as far afield as Asia, America and Europe. The review also identified 10 themes and 63 sub-themes. It is evident that multiple factors influence both initiation and continuation, and these are often interlinked, with shared features such as friendliness, safety and enjoyment. Both individual and social factors appear to be more influential than environmental factors during both phases. Both initiation and continuation had themes that were phase specific, but shared some themes and sub-themes such as enjoyment of walking, keeping fit, managing health conditions, self-efficacy, social support from fellow walkers plus fun and laughter. There were no shared environmental sub-themes. Further, although individual and social factors were present in both phases, the quality of these factors appears enhanced over time e.g., enhancement in self-efficacy and social connectedness. The review also identified that the factors related to the initiation and continuation of walking appear to be perceived by older adults as beneficial to physical, mental and social health. Given the importance of both individual and social factors, the subsequent studies considered each of these in detail.

Study two: a quantitative study informed by self-determination theory called WE:ROAM (N = 49) was undertaken to consider motivational changes in walking between two time points. Measurement for time point one was taken during the initiation phase of walking which was from week one to 6 months inclusive. Measurement for time point two was taken during the continuation phase, from 6 months onward. There was at least six months between the collection of data from time point one and time point two. This study identified that there were no significant or meaningful changes to the walking behaviour or motivational variables, contrary to the SDT pathway between phases. However, there were some relationships of significance between motivational variables at one time point, partially supporting the SDT pathway. Autonomy appears most strongly related to behavioural regulation, possibly suggesting that choice and control are important to motivation. In addition, relatedness was correlated with intrinsic motivation and vitality, suggesting that connection to others is related to vitality and quality of motivation. There were few relationships between the SDT variables and walking outcomes, which is also contrary to the SDT pathway. The lack of SDT pathway changes over time may be because the changes could have occurred prior to the first data collection. Although the findings of this study were not as expected, they do provide insight into the role of motivation on walking in groups. The findings indicate that autonomy satisfaction appears to be a particularly important need because it has the strongest relationships with behavioural regulations. It also seems that the level of relatedness satisfaction is strongly related to vitality and intrinsic motivation.

Study three: a focus group qualitative study (N =39) called WE:ROASE was undertaken to explore social factors linked to the initiation of group walking, and if those social factors were the same or different at the continuation phase. The WE:ROASE study identified that social themes attached to the initiation and continuation phases were similar, and clustered into four key areas related to: experiencing social support; seeking and experiencing social connections; links with the community and neighbourhood; and experiencing the positive nature of the social environment. Although similar between phases, the quality and strength of the themes during the continuation phase increased. This study also identified four social context stages experienced by walkers between the initiation and continuation of group walking: initiation with phase 1 pre-joining/joining plus phase 2 settling in; and continuation with phase 3 bedding in plus phase 4 belonging and leading.

Conclusions:

Walking groups are globally popular among older adults from ages 60 to 80, and are perceived to be beneficial to physical, mental and social health. It is evident that multiple factors influence both initiation and continuation of older adult group walking in line with the ecological framework, and these are often interlinked. Factors at the initiation and continuation phases of group walking are phase specific, but share some similarities. The strength and quality of these shared factors are enhanced or become more pronounced during the continuation phase. Individual and social factors appear to be more influential at both phases of group walking than environmental. Changes in motivational factors between the initiation and continuation of walking may happen within weeks rather than months of walking, but older adult walkers may join groups with adaptive motivational regulation, high need satisfaction and vitality.

Lay summary

Older adults are one of the least active groups within the population. Although much is known about the health benefits of being active, many older adults are not active enough to achieve these health benefits. Walking is the most popular type of physical activity for older adults, and group walking has been recognised as having added social benefits. Group walking could be a good way to help reverse some of the high inactivity levels in this age group. Paths for All is a charity that promotes walking in Scotland and runs a network of walking groups throughout the country. Access to older adult participants in these groups was provided to carry out the studies contained within this thesis. Overall, the three studies in this thesis aimed to identify the factors important to walking in groups. These were broken down into personal factors including aspects of physical and mental health; social factors such friendship and encouragement from others, and environmental factors such as new and beautiful places to walk and an organised walking programme. The factors were also divided into those that happened in the first six months of walking (described as the initiation phase) and those from six months and beyond (described as the continuation phase). Similarities and differences between these phases of walking were also identified.

First, a comprehensive examination of all published literature (called a systematic review) about older adults who walk in groups was carried out to see which personal, social and environmental factors had been previously written about. This review identified that walking groups are popular around the world for people in their 60s to 80s. Older adults see that walking in groups can benefit their physical, mental and social good health. Many of the reasons why older adults start and continue to walk are very similar, such as: wanting to keep fit; help with health problems e.g diabetes; to build up confidence in group walking; and encouragement and company from other walkers. Even when reasons are similar between phases, the quality of those factors seems to increase in the continuation phase e.g stronger feelings of confidence to walk and being connected to others. Some reasons for walking with groups belong only to starting or continuing. The review concluded that older adults recognise multiple reasons for walking in groups and often those reasons join together.

Second, the WE:ROAM study based on 49 people looked to see if motivation changed between the two time points of walking. Measurement for time point one was taken during the initiation phase of walking, which was from week one to 6 months inclusive. Measurement for time point two was taken during the continuation phase, from 6 months onward. There was at least six months between the collection of data from time point one and time point two. The study wanted to look at how three stages of motivation could be linked together. Stage one recorded how confident participants felt about walking, if they had choice over walking options, and felt a connection to others. Stage two recorded the types of motivation participants had from low to high. Stage three recorded how much energy and enthusiasm participants had (known as vitality) and how much walking they undertook in an average week. The study measured if there was an increase in scores at each stage between the two time points, which was the expected outcome. The study also measured how each stage was linked together. The study concluded that there were no changes of significance in scores at each stage from time point one and time point two. This unexpected finding could mean that the walkers had joined with high scores.

Another possibility is that participants had been walking for over two and a half months on average when they first took part. The study found that some of the motivational stages were linked together at time point one, suggesting some changes may have already taken place within time point one. The need for control and choice was linked to higher amounts of quality motivation and poorer types of motivation. This suggests that making sure participants have a sense of control and choice could be good for boosting high motivation. A high score for feeling connected to others was also linked to the highest form of motivation and high vitality. This also suggests that making sure participants feel welcome and looked after could boost vitality and high motivation. The links between walking and other stages were limited, but there was a problem with the questionnaire measuring walking, and this may explain this.

Third, the WE:ROASE study based on 39 people looked at the social reasons participants started walking with groups, and if these reasons changed or stayed the same when they reached six months plus. The reasons for starting and keeping going were very similar, and were in four themes: 1) the experience of being supported by others; 2) feeling connected to others; 3) links to the neighbourhood and community; and 4) positive feelings about the

social nature of the group and location. Although these clusters were similar for each phase, the quality and strength of each theme improved during the continuation phase e.g friendliness became full blown friendship. The study found that during the 0 to six month period there was a pre-joining and new start period and a settling in stage. During the six months plus stage there was a bedding in phase and a belonging and leading phase where some veteran walkers look out for new starts.

Walking groups appear to be popular for adults in their 60s to 80s across the world, and are seen by participants to help with physical, mental and social health. There are multiple factors influencing the decisions to start and then keep walking with the group. The starting and continuing phases have many similarities, but the quality and strength of those reasons increases as time passes such as friendship. It is important for participants to feel they have choice and control and are connected to others as this may boost motivation and vitality for walking.

Knowledge exchange

Presentations

Laing, N., Fawkner, S., Kelly, P., Martin, A., Niven, A. (2018). Why do older adults start and continue to walk with organised groups? A qualitative systematic review. Oral presentation at the Scottish Physical Activity Research Connections Conference (SPARC) Edinburgh 7 November

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Laing, N., Fawkner, S., Niven., A. (2017). Recruitment for the WE:ROAM study. Oral presentation at the Edinburgh Ageing Well walk leaders networking away day Edinburgh 19 April

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Laing, N., Fawkner, S., Niven., A. (2017). Systematic review and recruitment for the WE:ROAM study. Oral presentation at the Paths for All networking day Glasgow 23 March

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List of abbreviations

BPNT – Basic psychological need satisfaction (part of SDT)

BRWS – Behavioural regulations (in) walking (questionnaire)

CHAMPS – Community healthy activities model program (for) seniors (questionnaire)

OIT – Organismic integrated theory (part of SDT)

PA – Physical Activity

PfA: Paths for All – a Scottish charity promoting walking for everyone, every day, everywhere in Scotland

PNSWS – Psychological need satisfaction (for) walking scale (questionnaire)

SDT – a motivation theory called Self Determination Theory

SV – Subjective vitality (questionnaire)

WE:ROAM – name of study two Walking Experiences: Researching Older Adult Motivations

WE:ROASE – name of study three Walking Experiences: Researching Older Adult Social Experiences

1. Introduction

The purpose of this chapter is to explore the global, then Scottish, levels of inactivity and subsequent policy and practice being implemented to tackle this growing problem. The chapter has a specific focus on the older adult population, walking, and more specifically group walking.

1.1. The extent of global physical inactivity: a health priority for the 21st Century

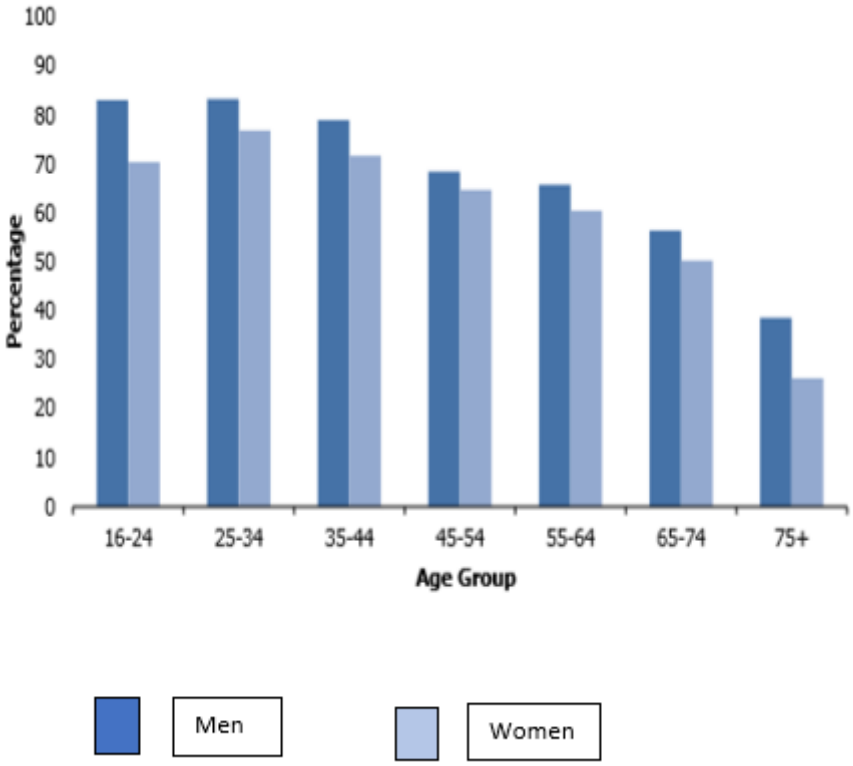
In the 21st Century, physical inactivity and its negative impact on health is now identified as a major global health priority (Guthold, Stevens, Riley, & Bull, 2018; Ozemek, Lavie, & Rognmo, 2019). In 2016, more than a quarter of adults were not undertaking enough PA, putting 1.4 billion adults at risk of either developing or worsening chronic health conditions as a consequence of being inactive (Guthold et al., 2018). The extensive range of chronic health conditions associated with physical inactivity also contribute to its global health priority status. Current estimates suggest that physical inactivity is directly attributable to 6% of the global responsibility for heart disease; 7% of type two diabetes and 10% of breast cancer (Ozemek et al., 2019). Other illnesses attributable to inactivity on a global scale include chronic respiratory disease, musculoskeletal disease, stroke and some neurological, and mental health conditions such as depression and dementia (Das & Horton, 2012; Fei, Norman, & While, 2013; Prince et al., 2015).

Within the overall population, older adults are more likely to experience higher levels of inactivity, and globally, adults aged 75 and older are considered the most inactive group (Ozemek et al., 2019). A recent study of over 34,000 adults with a mean age of 62 years, who completed the global PA questionnaire identified that nearly a quarter were not meeting recommended PA guidelines (Koyanagi , Stubbs, Smith, Gardner, & Vancampfort, 2017). Koyanagi et al. (2017) also acknowledged that due to the high levels of sedentary behaviour within this older adult population, PA promotion is essential in both high, middle and low income countries.

1.2. The extent of physical inactivity in Scotland

High inactivity levels and resulting poor health outcomes within Scotland are in keeping with global trends (The Scottish Government, 2018, 2020). However, Scotland has been world leading in its approach to tackling high levels of inactivity by introducing one of the first national PA strategies in the world called 'Let's make Scotland More Active' in 2003 (The Scottish Government, 2018, 2020). PA is still high on the Scottish Government agenda, with PA allocated as a component of one of the six public health priorities for Scotland in 2018. The active Scotland delivery plan, also published in 2018, laid out new targets for reducing inactivity levels (The Scottish Government, 2018, 2020). The target aim is to reduce physical inactivity in adults and teenagers by 15% by 2030. The most recently published PA levels for Scotland, state that adults are most active during the years 16 to 35. In relation to older adults (see figure 1 below), just under 60% of men and just over 50% of women aged 65+ were achieving the recommendation of 150 minutes of moderate intensity activity per week (The Scottish Government, 2020). By age 75, activity levels have dropped substantially lower.

Figure 1: Adult adherence to the moderate/vigorous physical activity guidelines 2018 by sex and age: (The Scottish Health Survey 2020)



Note: adherence = 150 minutes of moderate aerobic physical activity, or 75 minutes of vigorous aerobic physical activity, or a combination of both, per week

The consequences of high levels of inactivity are significant in Scotland. It is estimated that 2,500 deaths per year in Scotland are related to physical inactivity which cost the National Health Service £91 million annually, (The Scottish Government, 2014). Physical inactivity is the joint second biggest cause of mortality (shared with smoking). This equates to around seven people per day dying as a result of being physically inactive in Scotland (The Scottish Government, 2014). Therefore, reducing this tide of inactivity is acknowledged as a critical health issue for Scotland and all UK Governments (The Scottish Government, 2018, 2020).

1.3. Tackling the global problem of inactivity - identifying older adults as an 'at risk' group

There is now global recognition that older adults within the general population are a major at risk group, with much of the potential to reduce the disease burden coming from

preventative strategies targeted at older adults (Beard & Bloom, 2015; Koyanagi et al., 2017; Prince et al., 2015). This message has been reinforced by the most recent WHO global action plan on physical activity (WHO, 2018), that identified that inactivity levels of older adults are part of the global priority for all countries. When defining the older adult age, most developed world countries have accepted the chronological age of 65 years plus as a definition of 'elderly' or older person (WHO, 2015). However, for some developing countries, the age is set at 55. Reducing inactivity trends for this age group is especially challenging due to three key reasons: growing older adult numbers within the world population; the loss of physical function and mobility associated with the ageing process; and the manifestation of chronic health disease within this age group (Beard & Bloom, 2015; Brown, Finkelstein, Brown, Buchner, & Johnson, 2009; Buman, Daphna Yasova, & Giacobbi, 2010; Chatterji, Byles, Cutler, Seeman, & Verdes, 2015; Koyanagi et al., 2017). These challenges are explained in more detail below.

1.3.1. Growing older adult numbers within the world population

The worldwide population is rapidly ageing and this has been described as the next global public health challenge (Beard & Bloom, 2015; Suzman, Beard, Boerma, & Chatterji, 2015). Therefore, strategies to prevent age related ill-health, such as the reducing of inactivity, are even more essential (Koyanagi et al., 2017; Suzman et al., 2015). The world's population aged 60 years and older is set to rise from 84 million in 2013 to more than 2 billion in 2050 (Chatterji et al., 2015). It is estimated that as the proportion of older adults in Western societies continues to grow, so does their life expectancy (Koeneman, Verheijden, Chinapaw, & Hopman-Rock, 2011). However, despite life expectancy in older age increasing in almost all countries, the quality of life in those additional years remains unclear. In fact, up to a quarter of extra years lived beyond 65 could be spent in ill-health (Beard & Bloom, 2015; Hallal et al., 2015). Promoting PA as a disease prevention strategy could help to sustain healthy older age for longer (Suzman et al., 2015). Effective PA interventions offer one such way to extend the years of active, independent life, reducing disability and improving quality of life for older adults (Cress et al., 2005; Kirkland, Karlin, Stellino, & Pulos, 2011; Stephan, Boiché, & Le Scanff, 2010).

1.3.2. Loss of physical function and mobility associated with the ageing process

Unfortunately, ageing is associated with a significant reduction in muscle mass, which can have an impact on decreasing levels of PA (Koyanagi et al., 2017; Wallace, Lees, Minou, Singleton, & Stratton, 2014). Muscle mass atrophy occurs in the type two muscle fibres, in particular in the quadriceps muscle group. These type two fibres provide fast contracting velocity essential for acceleration, deceleration and direction change (Wallace et al., 2013). This age related decline in physical capacity can often result in increased effort to perform daily activities which can lead to avoidance of PA and exercise (Koeneman et al., 2011). As such, achieving levels of activity recommended may not be immediately attainable due to spiralling low levels of fitness or functional capacity, (Koeneman et al., 2011; Murtagh et al., 2015). In reducing the extent of age-related loss of physical function, PA can help to extend years of active independent living, (Brown et al., 2009; Fei et al., 2013; Koeneman et al., 2011).

1.3.3. The manifestation of chronic health disease within this age group

Older people are likely to have multiple, coexistent and interrelated health problems manifested in loss of function and frailty, gait and balance (Beard & Bloom, 2015; Koyanagi et al., 2017). In fact, the older adult age group absorbs 23% of the total global burden of disease as a large percentage of such disease is attributable to disorders in people aged 60 and over (Prince et al., 2015). Unfortunately, these illnesses are more prevalent and have a greater impact on the elderly population, (Kassavou, Turner, & French, 2013; van Stralen, De Vries, Mudde, Bolman, & Lechner, 2009). Longevity also increases the likelihood of mental ill-health such as dementia and depression, which in turn can lead to increased levels of physical inactivity (Fei et al., 2013; Pelssers et al., 2013). As with the loss of physical function, suffering from a chronic health condition has a negative impact on the desire and aptitude to undertake PA (Farrance, Tsofliou, & Clark, 2016; Koeneman et al., 2011).

1.3.4. The need for older adult focused PA research

With the recognition of the challenges attached to reducing inactivity within the older adult age group globally, there is an increased awareness that effective strategies and interventions directed towards older adults are increasingly important (Fei et al., 2013; Koyanagi et al., 2017; Prince et al., 2015). Unfortunately, historically there has been a shortage of research about the effectiveness of interventions relating specifically to older adults, and this has prevented appropriate evidence to adequately inform health policy (Brunet & Sabiston, 2011; Koeneman et al., 2011; Suzman et al., 2015). Historically, data relating to PA within older adult age groups has also attracted less interest than other age groups (Fei et al., 2013). However, the need and benefit of age specific PA research, especially for the most inactive within society is being increasingly recognised (Brunet & Sabiston, 2011).

1.4. Tackling the Scottish problem of inactivity – identifying older adults as an 'at risk' group

In Scotland, there has been a focus on specific groups at risk of inactivity and older adults were identified within this group (The Scottish Government, 2013). An additional £3 million of funding was allocated in 2012 by the Scottish Government to increase physical activity levels of those furthest away from achieving the recommended guidelines. Older adults were one of the main beneficiary groups targeted for funding, and are a key group linked to the active outcomes framework. The active outcomes framework sets out the shared vision and goals for the PA strategy in Scotland (The Scottish Government, 2019). It has six key aims listed below:

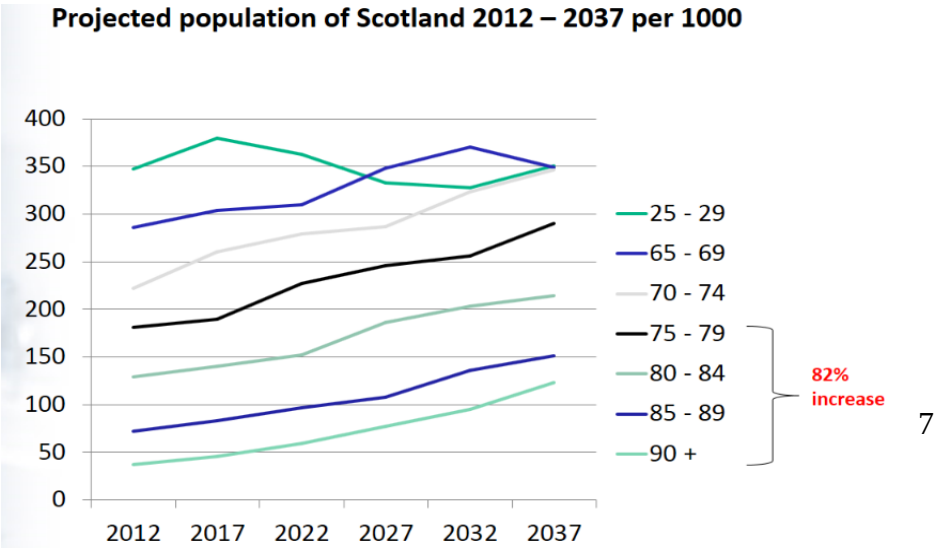
1. We encourage and enable the inactive to be more active
2. We encourage and enable the active to stay active through life
3. We develop physical confidence and competence from the earliest age
4. We improve our active infrastructure – people and places
5. We support wellbeing and resilience in communities through physical activity and sport
6. We improve opportunities to participate, progress and achieve in sport

Nearly all the outcomes are relevant and apply to older adult PA. As already highlighted, older adults are one of the least active groups within the population and therefore a key target for outcome one. Similarly, assisting and encouraging the active to have opportunities to stay active through life ensures a focus and monitoring of older adult PA opportunities. The improvement of an active infrastructure in relation to people and communities will also have an older adult focus. This is due to the importance of links to the community as adults age, due to their likely shrinking networks through illness and bereavement. In addition, safe spaces to walk and pursue PA, minimising falls, also become crucial for this age group. Finally, the aim to improve opportunities to participate and progress in PA and sport choices will include older adults, as part of the objective to provide opportunities for everyone in Scotland, especially those who struggle to access PA resources.

1.4.1. Tackling the Scottish problem of inactivity – the rapidly ageing population

In Scotland, the older adult population is expected to rise rapidly between 2012 and 2037 (see figure 2), with an anticipated 82% increase in adults aged 75 and above (The Scottish Government, 2015b). Unfortunately, in Scotland there is already a big gap between life expectancy and healthy life expectancy in older adults. In 2009 life expectancy for men in Scotland was 75 years, with healthy life expectancy ending at 60 years. For women, life expectancy was over 80 years, with healthy life expectancy ending at just over 62 years (The Scottish Government, 2015b). Therefore, the potential for a large number of older adults to live for decades in poor health is increasingly high if trends remain the same or stand still.

Figure 2: Projected population levels in Scotland



1.5. Tackling the global problem of inactivity: creation of global PA policy and guidelines

With physical inactivity now recognised as a global pandemic, it is more important than ever for the development of global policy, planning, leadership and advocacy to tackle the extent of the problem (Kohl et al., 2012; Prince et al., 2015). One such approach towards the development of global policy is the creation of national policies and action plans (Kohl et al., 2012). However, although creating such policies may contribute towards a strategy of reducing physical inactivity, the crucial factor is putting them into practice. Despite some evidence in the early 21st Century indicating that 73% of UN member states had an identifiable plan, only 55% were operational (Kohl et al., 2012). More positively, global surveillance of physical activity in adults and children within the early part of the 21st Century has progressed substantially, with data available in 122 countries (Hallal et al., 2012).

Guidelines are only helpful if they are put into practice. The WHO updated global action plan on physical activity acknowledged that not enough is being done (WHO, 2018). Unfortunately, the WHO (2018) recognised that the target for 2025, of a reduction of 10%, was likely to be missed as decline in inactivity to date is not fast enough, and is off track to meet the target. A new target of 15% relative reduction in global prevalence by 2030 in adults and adolescents was subsequently set (WHO, 2018). This new target was supported by Guthold et al (2018), who concluded that a full engagement is necessary to change the current global approach to reducing global inactivity. The WHO updated global action plan on physical activity (2018) reiterated the call for full global engagement, reaffirming that a global action plan for PA is not enough if it is not being implemented. The WHO (2018) confirmed that although 70% of countries have a policy, more needs to be done to promote non-motorised transportation and leisure. In an attempt to support countries to monitor the progress of PA levels, the WHO (2018) devised a global monitoring of inactivity framework.

1.6. Tackling the Scottish problem of inactivity - policy approach to creating a PA policy and guidelines

Scotland responded positively in its approach to physical activity policy in both policy creation and national guideline surveillance. As already discussed, Scotland introduced one of the first national PA strategies in the World called 'Let's make Scotland More Active' in 2003. This strategy was reviewed again in 2008, and in 2014, the National Physical Activity Implementation Plan (PAIP), A More Active Scotland; Building a Legacy from the Commonwealth Games, was published. The PAIP was a new ten year plan which adapts the key elements of the 2010 Toronto Charter for Physical Activity, which was the gold standard advocacy tool for physical activity (The Scottish Government, 2015a). At the end of ten years, the PAIP was replaced in 2018 by the Active Scotland Delivery Plan, and part of the delivery plan includes increased funding for cycle and walking paths (The Scottish Government, 2018, 2020).

In relation to PA guidelines, in 2011, the Scottish Chief Medical Officer collaborated with the other UK Medical Officers to coordinate and publish UK wide PA guidelines in recognition of the need to address the physical inactivity burden. These guidelines were updated in 2019 (Gibson-Moore, 2019; The UK Government, 2019), ensuring the guidelines are informed by up to date research, and therefore attempting to provide the best and most accurate guidelines for citizens within the UK nations, including Scotland. A summary of the guidance is listed below (Gibson-Moore, 2019; The UK Government, 2019). For good physical and mental health, adults should aim to be active daily, as any activity is better than none:

- Adults should do activities to develop or maintain strength in major muscle groups, which should be done on at least two days a week, but any strengthening activity is better than none;

- Over a week activity should add up to at least 150 minutes (two and half hours) of moderate intensity activity; or 75 minutes of vigorous intensity activity; or even shorter durations of very vigorous activity; or a combination of moderate, vigorous or very vigorous activity; and

- Adults should aim to minimise the amount of time spent being sedentary, and when physically possible should break up long periods of inactivity with at least light physical activity

The older adult guidance is a version of the adult guidance, but with a slightly different emphasis. In the revision of the Physical Activity guidelines in 2019, the importance of strength and balance exercises, especially for older adults, were highlighted by the older adult expert group reviewing the evidence (Gibson-Moore, 2019; The UK Government, 2019; Skelton et al., 2018). During the compilation of the physical activity guidelines update in 2019, the older adult expert group concluded that loss of muscle strength in ageing adults, is a major limiting factor for independent function (Skelton et al. 2018). Related to this, good muscle balance and mobility are vital to the ability to perform activities of daily living. Poor balance unfortunately, is a predictor for both higher cause mortality and cognitive decline. The expert group advocated that from a public health perspective, strength and balance exercises need to be embedded into daily activities, such as climbing stairs, doing sit to stands and walking. By building such activities into daily life, it is more likely to be successful in helping older adults break up sedentary time and feel less daunted about being more physically active. The older adult expert group concluded that multi component strength and balance activities, to be performed two to three times a week, would provide the optimal benefits for physical function (Skelton et al., 2018).

Paths for All already recognise the importance of strength and balance within their group walking programme, with the promotion of regular walks which incorporate simple strength and balance exercises. Paths for All walk leader training reinforces the importance of strength and balance activities as key to happy, active older age. The strength and balance activities are actively promoted on walks, in care home settings and as a series of resources available for organisations working with older adults.

The older adult expert group (Skelton et al., 2018) also identified that health benefits derived from PA included those relating to social functioning; some activity being better than none; and vigorous activity can contribute to meetings the guidelines, but this is appropriate for those who are already active. These findings are represented in the new specific older adult guidance detailed below.

- Older adults should participate in daily physical activity to gain health benefits, including maintenance of good physical and mental health, wellbeing, and social functioning. Some physical activity is better than none: even light activity brings some health benefits compared to being sedentary, while more daily physical activity provides greater health and social benefits;

- Older adults should maintain or improve their physical function by undertaking activities aimed at improving or maintaining muscle strength, balance and flexibility on at least two days a week. These could be combined with sessions involving moderate aerobic activity or could be additional sessions aimed specifically at these components of fitness;

- Each week older adults should aim to accumulate 150 minutes (two and a half hours) of moderate intensity aerobic activity, building up gradually from current levels. Those who are already regularly active can achieve these benefits through 75 minutes of vigorous intensity activity, or a combination of moderate and vigorous activity, to achieve greater benefits. Weight-bearing activities which create an impact through the body help to maintain bone health; and

- Older adults should break up prolonged periods of being sedentary with light activity when physically possible, or at least with standing, as this has distinct health benefits for older people

In keeping with the adult guidance, the UK nations are producing PA guidelines that include the most current evidence for the benefit of UK nation older adults.

1.7. Tackling the global problem of inactivity - importance of walking for PA within the older adult age group

From a global perspective, walking has been identified as an important component of total PA for adult populations (Hallal et al., 2012). Most walking is a low risk activity (Morris & Hardman, 1997), and may be the only form of physical activity available to some frail adults due to decreased physical function (Pelssers et al., 2013). A recent systematic review looking at effects of frequency, intensity, duration and volume of walking interventions identified that walking interventions can alleviate risk factors for cardio vascular disease

such as body mass index and body fat (Oja et al., 2018). In terms of walking speed, PA research, including another recent systematic review looking at self-rated walking pace and risk factors, identified that walking at an average of brisk speed reduced risks of all-cause mortality and other risk factors (Murphy, Donnelly, Shibli, Foster, & Nevill, 2012; Murphy, Nevill, Murtagh, & Holder, 2007; Stamatakis et al., 2018). Similarly, in terms of cadence (number of steps per minute), and how many steps is enough for health benefits, another recent study identified that greater or equal to 100 steps per minute, which is considered moderate intensity, is considered fast enough, during sustained ambulatory behaviour (Tudor-Locke et al., 2018). This is in keeping with other walking research which identified that walking at a pace of 3-5 mph (5-8 kph) expends sufficient energy to be classified as moderate intensity PA, (Kelly, Murphy, Oja, Murtagh, & Foster, 2011; Murtagh et al., 2015). However, such a pace may not even be necessary to achieve health benefits, because some researchers advocate that walking at a self-selected pace is moderate intensity for most adults (Ainsworth et al., 2000; Murtagh et al., 2012). It is not surprising, then, that walking has been described as 'the nearest activity to perfect exercise' (Morris & Hardman, 1997) walking generally is recognised as a common, accessible, inexpensive form of physical activity and as such is an important part of total physical activity in adult populations, (Michael, Perdue, Orwoll, Stefanick, & Marshall, 2010; Murtagh et al., 2015) .

1.8. Tackling the Scottish problem of inactivity - promoting walking at a national level

The Scottish Government, with the publication of the Scottish walking strategy in 2014, and the walking action plan (revised in 2019), has made a strong commitment to promoting walking (Campbell, Calderwood, Hunter, & Murray, 2017). As such, the Scottish Government has selected walking as key to its strategy in tackling physical inactivity in Scotland. One of the key messages promoting walking is that one of the 'simplest ways' for most people within the country to do more PA is through walking (Campbell et al., 2017). The Scottish Government also has aspirations to achieve similar walking levels to countries acknowledged to be the best performing such as the Netherlands, Switzerland and Norway (The Scottish Government, 2014). As such, it has a strategy to make Scotland a walking friendly nation. The walking strategy has three key aims: to create a culture of walking; to develop better walking environments; and to support easy, convenient and independent walking (Campbell et al., 2017). There are some encouraging signs that walking in Scotland

is increasing. In 2017 70% of adults in the household survey reported that walking was the most common activity of 30 minutes duration (The Scottish Government, 2020).

1.9. Tackling the global problem of inactivity - the potential for group walking in the older adult age group

Group walking is effective in increasing PA when targeting older adults, because it allows for moderate intensity walking, with the added bonus of social contact and conversation during participation (Hanson & Jones, 2015; Pelssers et al., 2013). Group walking is characterised as participants who walk collectively in organised walking groups, with group being characterised as two people or more (Kassavou, Turner, Hamborg, & French 2014). For older adults who have lost some physical function, short supervised walks led by qualified instructors can be especially beneficial by acting as a supported stepping stone from being inactive to more active (Grant, Machaczek, Pollard, & Allmark, 2017; Kassavou, Turner, & French, 2015). As the older age group spans a significant age range and breadth of physical abilities, the ability of walk leaders to adapt the length and terrain of walks is ideal (Grant et al., 2017a). Group walking has also proved to be cost effective, which is important to some older adults (Grant et al., 2017a; Hanson & Jones, 2015). Older adults are also known to enjoy the group aspect of physical activity, which is perceived to be more inclusive and friendly (Killingback, Tsofliou, & Clark, 2017). Similarly, group PA often includes a group leader who has some responsibility for health and safety and physical activity expertise (Carrapatoso et al., 2017; Killingback et al., 2017)

The benefits associated with the social aspects of group walking are becoming increasingly recognised in the walking literature (Ball, Abbott, Wilson, Chisholm, & Sahlqvist, 2017; Hunter, Ball, & Sarmiento, 2018; Morris, Guell, & Pollard, 2019; South et al., 2017). The social aspects of group walking can be especially beneficial to older adults who are more likely to live alone (Pelssers et al., 2013; South et al., 2017). In the UK, the highest percentage of people living alone are aged 65 and above, with more than half of those aged 75 and above living alone (Age UK, 2014). Living alone can exacerbate the possibility of loneliness, and being part of a social network, such as a walking group, can help to alleviate loneliness (Age UK, 2015). Connectedness to other individuals through social networks has been linked to a wide variety of positive health outcomes in numerous studies (Cornwell and Laumann, 2007). Likewise people who are involved in group activities are less

depressed, are in better physical health and live longer than those who are not (Cornwell and Laumann, 2007).

1.10. Tackling the Scottish problem of inactivity – the potential for group walking in the older adult age group

Paths for All (PfA) is a Scottish charity championing walking within Scotland, and part of their remit is to run and support over 550 walking groups throughout Scotland. With a strategy to promote walking for everyone, every day and everywhere, PfA manages and delivers the walking strategy on behalf of the Scottish Government. Running and promoting their network of walking groups is a key part of the overall walking strategy. Their groups are managed and coordinated by a large group of walk coordinators and walk leaders who benefit from training such as walk leader training, provided centrally.

1.11. Tackling the global problem of inactivity – gaining a better understanding the multiple factors relating to PA behaviour change

In relation to factors influencing walking behaviour, a systematic review of walking interventions identified that walking behaviour is likely to be influenced by individual, societal, environmental and political factors (Ogilvie et al., 2007). Similarly, some older adult PA research supports this multi-dimensional approach with suggestions that a whole range of PA determinants need to be identified, examined and addressed in order to see long term changes in inactive to active behaviour (Bauman et al., 2012; Cress et al., 2005). Knowledge about the influence of all aspects of behaviour can inform the development of multi-level interventions to offer the best chance of future success (Bauman et al., 2012; Sallis, Owen, & Fisher, 2008).

This multi-dimensional approach to tackling inactivity is reinforced by the World Health Organization in its new action plan for physical activity called More active people for a healthier world (WHO, 2018). The new strategic approach within the action plan recognises that targeting physical inactivity requires a systems-based approach. This strategic systems-based approach highlights the need to tackle the multiple factors that determine participation in PA in order to create effective policy and practice. This includes a

combination of individual characteristics, such as personal PA preferences, sociocultural, family and cultural traditions, together with solutions that need to embrace societal values, social norms and customs traditions and the economic and physical environment. More specifically, the WHO action plan (2018) calls for national responses to PA to take an individual 'down-stream' approach, together with 'upstream' approaches which take into account the wider social and environmental factors. The long term aim of the WHO action plan, in undertaking such a multi-dimensional approach, is to encourage the construction of interventions promoting PA behaviour change that address multiple, overlapping factors. This will hopefully provide additional insight into the challenges of reducing stubbornly low PA levels, especially in 'at risk' groups such as older adults (Sallis et al., 2008). Therefore, such knowledge will help to build a bigger picture explaining why some people start and sustain activity (Bauman et al., 2012), and can then inform policy and new PA intervention (Bauman et al., 2012; Cress et al., 2005).

1.12. Tackling the global problem of inactivity - Getting a better understanding of the multiple factors influencing PA behaviour change – the ecological framework

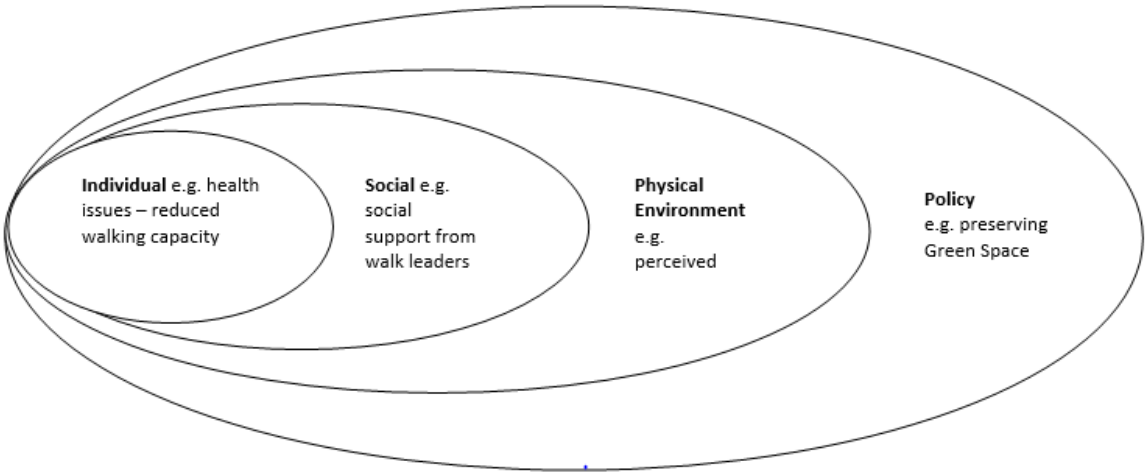
Embracing a multi-dimensional approach to exploring and tackling inactivity is supported by the ecological framework methodology, which is a model of health behaviour change (Sallis et al., 2008). The core concept of ecological models is that behaviour has multiple levels of influence including: intrapersonal (biological and psychological); interpersonal (social and cultural); organisational; community; physical environment; and policy. The emphasis of this behaviour change model is explicitly focused on multiple and interchangeable levels of influence, thereby guiding the development of more comprehensive interventions.

1.12.1. Using the ecological framework to explore older adult group walking

The ecological framework is an ideal behaviour change model to use as a framework to explore physical activity such as walking in walking groups (see figure 3). The ecological framework can be represented as four concentric circles containing behavioural factors relating to individual, social, environmental and political behavioural influence, with individual behaviours at the centre (Sallis et al., 2008). Each type of influence stands alone,

but they all interconnect and overlap with behaviours contained within separate circles. The important issue is the combination of behaviours and the interaction between them, with the knock on effect resulting in the whole being greater than the sum of its parts (Bauman et al., 2012; Sallis et al., 2008). Adopting this framework to explore walking in walking groups will provide an in-depth breakdown of the factors and behaviours associated with walking in groups and how they interrelate. This information then has the capacity to inform the outer political and policy level.

Figure 3: The ecological framework



For example:

- Individual factors such as walking capacity are affected by social factors, eg the amount of social support received from a spouse or friend to attend, or how much support they receive from walk leaders and other walkers during walks to help with their walking challenges, both during walks and after walks sharing refreshments;
- Individual factors are also influenced by environmental factors, eg issues such as the importance of perceived neighbourhood safety, accessibility to walking spaces, suitable walking paths for someone with reduced walking capacity, to support regular walking;
- Social factors can also impact on environmental factors, eg the options within the environment such as choice of different walks, different gradients within the

location would allow a walk leader to offer more choice and support to walkers with reduced capacity; and

- Environmental factors can also impact social factors, eg walking trips to specific areas such as landmarks or nature reserves, where walkers can share their interest and level of enjoyment. Environments with choices for refreshment stops will also encourage the social aspect at the end of a walk too.

1.13. Tackling the global problem of inactivity - gaining a better understanding of the stages of behaviour change - factors which relate specifically to starting and continuing walking in groups

There is a recognition within the PA literature that stages of behaviour change exist, and individual phases of behaviour change may be influenced by differing stimuli (Fjeldsoe, Neuhaus, Winkler, & Eakin, 2011; Nigg, Borrelli, Maddock, & Dishman, 2008; van Stralen et al., 2009). Therefore, identifying the factors which relate specifically to phases of PA, such as initiation and continuing activity, will further improve our knowledge and understanding of older adult PA, and how best to design and implement interventions (Chen & Millar, 2001; Nigg et al., 2008; Voils et al., 2014). PA interventions have varying degrees of success with adoption, but maintenance over the long term is very difficult to achieve (Koeneman et al., 2011; Scott, Breckon, Copeland, & Hutchison, 2015). As health benefits are not maximised until maintenance has been achieved, it is especially important to understand how factors inducing maintenance may differ from initiation (Kahlert, 2015; Scott et al., 2015). Sustaining physical activity has further important health implications for older adults with chronic health conditions (Koeneman et al., 2011; Nour, Laforest, Gauvin, & Gignac, 2007). Sustained PA can result in a reduction of symptoms. In addition, the route to maintenance may not always be a linear process, with a series of stops and restarts marking ongoing progress which can be volatile (Kahlert, 2015). Therefore, an understanding of the behavioural factors linked to specific phases of PA uptake would help to inform interventions designed to entice the inactive to start and then sustain PA.

The route to PA maintenance is further complicated by the ambiguity surrounding the identification of achieving PA maintenance (Fjeldsoe et al., 2011; Kahlert, 2015; Kassavou et

al., 2013). For some researchers, PA maintenance is achieved once the participant has been undertaking the activity for at least six months (Baruth & Wilcox, 2014; van Stralen et al., 2009). According to Brown et al. (2009), maintenance relates to frequency and duration, and for how long and how regularly PA is carried out. For other researchers it is less about timescales and more about the formation of habit strength and once the behaviour operates effortlessly and efficiently (Fjeldsoe et al., 2011; Gardner & Lally, 2013). Identifying reliable predictors of exercise behaviour including multiple levels of influence and phases of activity allows researchers and practitioners to effectively structure interventions that maximise long term exercise (McAuley, Jerome, Elavsky, Marquez, & Ramsey, 2003).

1.13.1. Setting a working definition of initiating and maintaining walking in organised walking groups

Due to the ambiguity surrounding the definition of initiation and maintenance of activity, a working definition of initiation and maintenance of group walking was agreed for the studies undertaken within this thesis in keeping with the van Stralen et al literature review (2009) exploring the determinants of initiation and continuation of PA among older adults . They are listed below:

Initiation: From the period of adoption of group walking up to six months of participation

Maintenance: From at least six months of participation in group walking

1.13.2. Setting a definition for the minimum number of walkers to constitute a walking group

There are many walking programmes reported on within the PA literature, but it is often unclear whether they are individual home-based programmes or part of an organised group. In fact, even when the research relates to organised walking groups, very few define the minimum number needed to constitute a group. Due to the potentially significant social implications of walking in groups, (Kassavou et al., 2013; Pelssers et al., 2013), it was important to define the minimum number of walkers to constitute a walking group for the studies within this thesis. In keeping with the two studies identified which make reference

to a minimum lower number to constitute a group, a group for the purpose of this thesis is defined as two people or more (Cott, Dawson, Sidani, & Wells, 2002; Kassavou et al., 2013)

1.14. Research design and approach to philosophical underpinnings for the thesis

The research design adopted for this thesis is a mixed methods design, combining both quantitative and qualitative methodologies. The pragmatic approach is becoming increasingly popular within health psychology and sport/PA mixed methods research (Bishop, 2015; Smith, 2010; Thomas, Nelson, & Silverman, 2015). There are a number of reasons for the growth in the popularity of a pragmatic approach to a mixed methods design. It is partly to do with a recognition that a single research approach may reduce the opportunity to explore all aspects of the research subject (Smith, 2010). It is also connected to a desire of many researchers to take a pragmatic 'real world' approach, where combining both quantitative and qualitative methodologies, enables multiple observations of the research subject (Thomas et al., 2015). The practical approach also allows the researcher to maximise the strengths of both quantitative and qualitative methodologies, offsetting the potential weaknesses of relying on one methodology for all studies (Smith, 2010). As a consequence of using two methodologies, the pragmatist approach helps balance the challenges of marrying the differing philosophical stances underpinning quantitative and qualitative methodologies together, and can help to answer complementary questions on the similar subjects (Bishop, 2015; Thomas et al., 2015).

However, as much as taking a pragmatist approach has many advantages as detailed above, it does require the challenge of incorporating two methodologies with very different research paradigms (Bishop, 2015; Thomas et al., 2015). Quantitative methods are traditionally aligned with positivist or post positivist epistemologies. Epistemology relates to the theory of knowledge and the knowledge gathering process (Bishop, 2015; Smith, 2010). Positivist and post positivist epistemologies relate to realist beliefs that there is an independent reality that is knowable and free from bias (Smith, 2010). In contrast, qualitative methods are aligned with constructivist or interpretive epistemologies. Constructivist or interpretive epistemologies relate to relativist beliefs that we know the world through human experience, and this is subject to cultural and individual differences (Bishop, 2015). Historically, undertaking research attempting to incorporate both paradigm

approaches has been considered difficult, even inconceivable, with phrases such as paradigm wars in use (Thomas et al., 2015). However, in keeping with the pragmatic approach, mixed methods began to emerge in social research because addressing all issues relating to a particular subject required differing approaches and methodologies (Hunter et al., 2015).

By adopting a research project that encompasses both quantitative and qualitative methodologies, it is important to ensure the studies within the project adopt and follow the appropriate design and measurement principles of each methodology (Bishop, 2015). Adopting a pragmatic approach within a mixed methods project enables this process by fully acknowledging the epistemological differences, and being true to the appropriate study design. However, although it is important to adopt the appropriate format and structure per study within the research project, the pragmatist approach focuses less on whether research undertaken is an accurate representation of reality, and more on whether the research is valuable within the sphere of exploration (Bishop, 2015). In a health setting this may represent valuable outcomes such as potential improvements to services for patients, or quality of life improvements for patients (Bishop, 2015). Another important principle of a pragmatic approach is to enable the researcher to achieve their desired outcomes. As such, the approach is considered practical, and facilitates researchers to adopt mixed methods methodologies to tackle practical challenges which exist in a three study PhD project (Bishop, 2015; Thomas et al., 2015).

1.15. Overall aims of the thesis

The overall aim of the thesis was to focus on using the ecological framework to enhance the understanding of why older adults start, and then continue, to walk with walking groups. Therefore, in order to achieve this aim, three objectives were addressed that align to each study as follows:

1.15.1. Objectives of the thesis

Undertake a qualitative systematic review to identify the individual, social and environmental factors influencing the initiation and continuation phases of older adult group walking;

Within the individual context of the ecological framework: undertake a quantitative study to identify if motivational changes in older adult PfA group walkers took place between two time points: initiation and continuation; and

Within the social context of the ecological framework (incorporating social/ environmental issues): undertake a qualitative study to explore social factors identified by older adult PfA group walkers linked to the initiation and continuation of group walking, to assess if social factors are the same or different per phase of group walking.

2. A qualitative systematic review: why do older adults start and continue to walk with organised groups?

2.1. Background

2.1.1. Physical activity maintenance and older adults

The need to promote physical activity in the least active populations is now a major global health priority, with older adults one of the key target groups (Guthold et al., 2018; Kohl et al., 2012; Suzman et al., 2015). Therefore, gaining a better understanding of PA behaviour in older adults and promotion of PA adherence is especially important in this population (Farrance et al., 2016; Koeneman et al., 2011). Unfortunately, adults in this age group are more likely to become increasingly inactive and prioritise other activities despite recognising the health benefits of keeping active (Amireault, Godin, & Vézina-Im, 2013; Farrance et al., 2016; Koeneman et al., 2011; Sheldon, 2003). The penalties of being inactive can be severe. High levels of inactivity can result in a loss of physical function and the development of chronic health conditions, especially for this age group (Koeneman et al., 2011). It then takes an increasing effort to be physically active and a growing reluctance to undertake PA, resulting in a further decrease in activities of daily living and physical function (Buman et al., 2010; Koeneman et al., 2011). Thus, the consequences for older adults of high levels of inactivity can lead to a downward spiral of ill health.

Although it is never too late to reverse these trends, the ability to remain active can prove challenging in this age group (Jancey et al., 2006; Koeneman et al., 2011). It is positive that an estimated half of age-related physical function decline is preventable with PA adherence (Jancey et al., 2006; Koeneman et al., 2011; Pelssers et al., 2013). However, many older adults never undo the health problems resulting from being inactive because there is a high likelihood they will lapse back to inactivity before maximising health benefits (Scott et al., 2015). An estimated half of those who start to be physically active will slip back to into inactivity within six months (Amireault et al., 2013; Farrance et al., 2016). Therefore, learning from those older adults who maintain physical activity could be a crucial method to

inform ongoing policy and practice in this field (Amireault et al., 2013; Farrance et al., 2016).

2.1.2. The importance of differentiating between the initiation and maintenance phases of physical activity

Identifying factors that relate specifically to initiation and continuation phases of PA in older adults will enhance knowledge and understanding, and how to use this knowledge to design and implement interventions (van Stralen et al., 2009). As previously identified, the limited success in getting and keeping older adults physically active shows a need for greater knowledge of the factors that underpin both PA initiation and maintenance (Edmunds, Ntoumantis, & Duda, 2007; Koeneman et al., 2011). The introductory chapter highlighted the ambiguity surrounding the definitions and depiction of both initiation and continuation. In summary, there are differing views and definitions of the transition from the initiation phase of activity into continuation. For example, duration and frequency of attendance are considered important factors (Fjeldsoe et al., 2011; Kassavou et al., 2014), together with habit (Nour et al., 2007).

Specifically in relation to the initiation phase, it is important to recognise that initiation does not purely denote the start of an activity. Initiation also encompasses a time prior to beginning the activity, where contemplation of starting is taking place (van Stralen et al., 2009). It is also important to fully understand factors which trigger the decision to start undertaking PA, and encourage initial and early attendance (Edmunds et al., 2007). Edmunds et al (2007) identified that unless people are enticed to start being active, they will never have an opportunity to reach maintenance. In order to understand the initiation phase of an activity, the post starting point also needs to be taken into consideration, where continuation has not yet been established, but some continuity is being established (van Stralen et al., 2009).

Specifically in relation to the continuation phase, achieving continuation is not always a linear activity. Unfortunately for many people, there may be many cycles of initiation, lapse, and restarting before continuation is fully established (Chen & Millar, 2001; Nigg et al., 2008). It is also especially important to understand factors associated with PA maintenance because health benefits are maximised with adherence (Kahlert, 2015; Scott

et al., 2015). Therefore, an in-depth focus on factors related to the initiation, continuation and those factors relevant to both phases would be helpful in gaining a better understanding of the key factors inducing and sustaining older adult PA (Edmunds et al., 2007; Koeneman et al., 2011). The factors that influence both phases may be different, and as such, have implications for intervention planning (van Stralen et al., 2009).

2.1.3. Older adult focus on walking and group walking – key factors relating to initiation and continuation

Walking is an ideal mode of PA to focus on for an exploration of factors that induce and sustain older adult PA (Jancey et al., 2008; Thogersen-Ntoumani et al., 2017; Thorup et al., 2016; Van Hoecke, Delecluse, Bogaerts, & Boen, 2014). According to Morris and Hardman (1997), who wrote a seminal paper on the benefits of walking, walking is low risk, inexpensive and the near perfect type of exercise. More recent research has reinforced these messages. Two systematic reviews identified that walking has a significant positive impact on multiple cardiovascular disease risk factors, including BMI, body mass, and VO_2 max. (Murtagh et al., 2015; Oja et al., 2018). It is not surprising then that walking is the mode of PA that many older adults will turn to, where other forms of PA are considered beyond their physical capacity (Pelssers et al., 2013).

Walking in groups may provide additional opportunities for sustained activity because of the additional benefits provided by the group context (Carrapatoso et al., 2017; Grant et al., 2017a). For inactive older adults, group walking could induce participation where other forms of PA may not (Kassavou et al., 2014). Older adults tend to enjoy being active with others (Amireault et al., 2013; Farrance et al., 2016), and other benefits of group activity for this age group include: social inclusion (Grant et al., 2017a; Pelssers et al., 2013), not exercising alone (Carrapatoso et al., 2017; Killingback et al., 2017) and feeling attached to the community (Capalb, O'Halloran, & Liamputtong, 2012; Duncan, Travis, & McAuley, 1995b; Lee et al., 2017; Taylor et al., 2003). Community based walking group settings, where moderate intensity walking allows for social contact, is ideal for older walkers (Pelssers et al., 2013). In summary, the dynamic of walking groups has the capacity to boost social inclusion, cohesion and PA maintenance (Capalb et al., 2012; Pelssers et al., 2013). Therefore, there is value in increasing our understanding of how to encourage older adults to start and continue to walk in groups.

2.1.4. Understanding more about factors that influence older adults to walk in groups – the ecological framework

A systematic review exploring interventions to promote walking suggested that walking behaviour is likely to be influenced by environmental, societal and individual circumstances (Ogilvie et al., 2007). As outlined in the introductory chapter, the ecological framework highlights that behaviour can be influenced by the inter-connected factors linking the individual, interpersonal and environmental contexts (Sallis et al., 2008). The older adult walking literature supports the Ogilvie et al (2007) finding, providing evidence that walking behaviour is influenced by the three contexts depicted in the ecological framework, as summarised and referenced below.

From an individual perspective, older adult PA walking literature has identified the following personal factors as important to participation: age, gender, health status (physical and mental) and a history of PA (Donovan & Kennedy, 2015; Jancey et al., 2006; nguyen, Gauvin, Martineau, & Grignon, 2005) . Psychological factors such as self-efficacy and sense of well-being are also significant (Carrapatoso et al., 2017; Grant, Pollard, Allmark, Machaczek, & Ramcharan, 2017). From the social perspective, the following social factors have also been identified as important to older adults: social support from fellow walkers, leaders and family; and companionship and enjoying being with other older adults (Capalb et al., 2012; Grantl., 2017b; Normansell et al., 2014; Thogersen-Ntoumani et al., 2017). The environmental perspective has identified the importance of location, be it indoor or outdoor, accessibility and safety of terrain plus an inclusive programme structure (Duncan et al., 1995b; Grant et al., 2017a; Taylor et al., 2003). Although there is evidence that older adult walking is indeed influenced by individual, social and environmental factors, to date no review has been undertaken to systematically explore older adult group walking literature within the individual, social and environmental perspectives, and how they potentially inter-connect. Additionally, no other review has explored factors influencing initiation and continuation in a walking group setting.

2.1.5. Why do older adults start and continue to walk in groups? A systematic review

A systematic review exploring individual, social and environmental factors which influence older adult group walking behaviour will address the established current research gap. There are currently systematic reviews that address factors influencing the initiation and continuation of older adult PA behaviour (Amireault et al., 2013; Farrance et al., 2016; Fei et al., 2013; Koeneman et al., 2011; van Stralen et al., 2009). However, there are no systematic reviews exploring PA initiation and continuation which are walking specific in relation to older adults. There are also two walking group specific systematic reviews which explore health benefits and factors influencing walking behaviour respectively (Hanson & Jones, 2015; Kassavou et al., 2013). However, neither of these reviews of walking behaviour are older adult specific. Consequently, the systematic review undertaken as study one within this thesis focused specifically on individual, social and environmental factors that influence the initiation and continuation of older adult group walking behaviour.

2.1.6. Systematic review approach

The systematic review to establish why older adults start and continue to walk in walking groups was undertaken from a qualitative perspective. Qualitative reviews look to understand the 'hows' and 'whys' of social phenomena by exploring direct experience (Ring, Jepson, & Ritchie, 2011). As this review was designed to address the 'whys' relating to older adults who start and continue to walk, the qualitative framework (adopting thematic synthesis – discussed in more detail below) provided an ideal methodology. A qualitative framework also provides a clear understanding of the intricacy of PA behaviour by listening to the stories and lived experience, in this instance older adults (Buman et al., 2010; Capalb et al., 2012). Often factors associated with PA are perceptual and rooted in personal belief about perceived risk or reward to health (Buman et al., 2010). Therefore it is important for the researcher to understand how and why unique beliefs are created, plus the reasons why attitudes and behaviour choices are formed and carried out by those being studied (Buman et al., 2010). Systematic reviews in relation to factors associated with PA to date have also been largely quantitative in design (Farrance et al., 2016). As there are relatively few studies utilising qualitative methods to examine why older adults participate

in walking, the findings of this qualitative systematic review will add to this developing body of literature.

2.1.7. The aims of this systematic review

This qualitative review aimed to answer the following questions:

1. What individual, social and environmental factors are linked with the initiation phase of older adults walking with organised groups?
2. What individual, social and environmental factors are linked with the continuation phase of older adults walking with organised groups?
3. Are there any similarities and differences in factors linked with initiation and continuation phases of walking with organised groups?

2.2. Methods

2.2.1. Methodology

This qualitative systematic review adopted the Thomas & Harden (2008) thematic synthesis methodology. Thematic synthesis is a tried and tested qualitative method, especially for health related topics (Ring et al., 2011). Thematic synthesis preserves the process of translation of original studies through the development of descriptive and analytical themes, whilst at the same time going beyond the findings of the original studies to answer the specific questions of the systematic review (Ring et al., 2011; Thomas & Harden 2008). The thematic synthesis process of translation, through the development of descriptive and analytical themes, is undertaken in a rigorous way that enables a transparency of reporting (Ring et al., 2011).

This systematic review followed the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) guidelines. This is an evidence based minimum set of items used for reporting systematic reviews (Shamseer et al., 2015). A protocol for this review was prepared and registered with PROSPERO: registration number CRD42017075571.

2.2.2. Definitions of initiation and continuation of group walking

In order to identify factors that related specifically to the initiation phase, continuation phase, or both, a definition for each phase was created for this systematic review. These definitions were identified in the introductory chapter. For the purposes of this review, the definitions are as follows: the initiation phase was defined as from the period of adoption of group walking up to six months of participation, and the continuing phase was defined as from at least six months of participation in group walking.

2.2.3. Search strategy

A version of the PICOC (population, intervention, comparison, outcomes, and context) model (Petticrew & Roberts, 2012) was used to define the search terms for this review. The initial search was designed for both a quantitative and qualitative systematic review. The quantitative findings are not reported here. Search terms included a combination of free text and group heading searches around three specific categories. These categories related to target population; the PA domain and group-based PA. The search terms are shown below, and appropriate boolians and search headings were applied, as per data base.

Figure 4: Search strategy

Exp Elderly/old age/retired people Elder*/ old* adult*/ senior*/ pensioner*/over 60*/ over sixt*/ sixt* plus/60*plus/retire* AND Exp walking/exercise/physical activity Exercis*/ physical* activ*/walk* AND Group exercis*/group physical* active*/group walk*/led walk*/walk* trail*/ walk trial*/walk group* walk* scheme/ walk* program*/ nordic walk*/walk* club/ walk session*/ community led walk*/ led walk*/ walk* intervention*

A systematic literature search on the following 12 electronic databases was then undertaken: Medline, CINAHL, PsychINFO, EBSCO, OVID, Web of Science, CABabstracts, SPORTDiscus, Science Citation Index, Social Science Citation Index, the Cochrane Library, and Dissertations and Theses. Search terms were tailored for each database searched. Additional articles were located via correspondence with authors. The original searches were run in August 2015. An updated search was then undertaken in June 2017 in order to capture studies published after the first search run.

2.2.4. Screening and inclusion

All titles and abstracts were reviewed by the first author NL against the inclusion and exclusion criteria detailed in table 1. Authors AN and SF screened 10% of those titles, resulting in a 92% agreement rate between the first author NL and authors AN and SF. Figure 5 (in the results section) shows the PRISMA search and selection diagram for each stage of the process. Table one also shows the inclusion/exclusion criteria. Once articles for full text screening were identified, the first author NL screened all of the full text articles and authors AN and SF searched 10%, with an agreement of 89%. Full text studies were included if they met the inclusion criteria detailed in Table 1. At this point, first author NL divided all included studies into quantitative and qualitative findings.

Table 1: Why do older adults start and continue to walk in walking groups PICOC criteria

PICOC	Inclusion	Exclusion
WHO? **P**opulation: (What population am I interested in? (Petticrew and Roberts)	***Age:*** • Older adults 60 + • Older adults with a mean age of 60 + • Adults if the end of the age range is = to or greater than 60 (for initial screening) • Adults if no age range is defined in the abstract (for initial screening) Men and women All SES All health conditions including clinical populations and chronic health conditions	***Age*** • Adults if the end of the age range is less than 60 • Adults if the mean age is less than 60 • Young and middle aged adults
WHAT TYPE?	• All studies if it relates to PA and not clear if it about walking (initial screening) • All study types if they relate to older adults walking as a group	Non-empirical evidence (e.g not the primary source of the research) e.g • Systematic review

Intervention: (What interventions am I interested in reviewing? - Petticrew and Roberts) This will include other types of studies for my systematic review	• Quantitative studies will be included • Qualitative studies will be included • Include studies which make reference to a walking program/mme or walking intervention if it not clear from the abstract whether it is within a group context (initial screening) • Include studies which report on a specific intervention, studies which are based on participant feedback and studies which are based on walk leader feedback	• Info from conferences • Clearly states a non-walking form of PA e.g yoga or water aerobics
RELATED TO? **C**omparison: (What is the intervention/study being compared to – Petticrew and Roberts)	Include if there are comparison groups or not If there are comparison groups, only include if one of the groups relates to older adults walking in groups	
WHAT FOUND? **O**utcomes:	• **A measure of taking part in a walking group** ***Subjective measures*** include attendance and duration of participation or	***Exclude if there is no explicit focus/outcome which relates to the factors/determinants of initiation or maintenance of the physical activity***

(What type of outcomes result from the studies? Petticrew and Roberts)	***Objective measures include*** accelerometer data or survey data as long it is about walking in groups. Include if the survey has a measure of PA but it is not clear if walking specific information can be extrapolated (initial screening) • **A main focus of the paper is identifying what influences engagement, adherence, attendance – these will relate to the specific factors detailed below** **Factors will include at least one of the following:** • Socio-demographic factors for starting/continuing to walk with the group eg SES • Personal/behavioural factors for starting/continuing to walk with the group eg physical health status, gender, age • Psychological factors for starting/continuing to walk with the group eg motivational self-efficacy • Social factors for starting/continuing to walk with groups eg social support • Environmental factors for starting/continuing to walk with groups eg perceived neighbourhood safety • General motivations for taking part/continuing	

	• General characteristics associated with walking with the group • If there is a relationship between the outcome variable (measure of walking) and adherence to the intervention	
WHERE/HOW? **C**ontext: (For reviews of social science interventions there is a further component – the context within which the intervention is delivered – Petticrew and Roberts) e.g where it is done and how it is done	• Walking specifically with a walking group: e.g peer led walk/community group walks/health walks in a group • Group is a minimum of 2 people – (include buddy walks) • If the PA activity is not defined in the abstract (initial screening)	• If the study specifically states that the activity is **NOT** walking in a group context • If the study states that the activity is an alternative form of PA eg exercise class/gym class/ tai chi/ • If the programme is home based • If the programme is an individual programme • If the walking is related to falls prevention eg in a nursing home environment and ***ONLY*** involves carrying out a series of walking tests such as the 6 minute walk test to look at walking stability with a carer • If the walking relates to physical function or prevention of deterioration and does ***NOT*** mention any factors relating to specific reasons as to why they chose to start or continue • Studies in a foreign language

2.2.5. Quality appraisal of included studies

Consistent with Thomas & Harden's (2008) guidance, a quality assessment on all included studies was carried out by first author NL, using the Critical Appraisal Skills Programme for qualitative studies (CASP) and a sensitivity analysis to assess the quality of each study in relation to answering or translating findings to the specific research questions of the systematic review. The quality assessment process incorporates two important functions. Firstly, it addresses both the quality of each included study, incorporating the rigour of the analysis process. Secondly, it assesses how closely the findings of each of the included studies meets the research questions of the systematic review, and how translatable the findings are to the systematic review research questions. To ensure the trustworthiness of the quality assessment process, NL discussed the process and findings with AN and SF, who maintained the critical friend approach (Green & Miyahara, 2007; Smith & McGannon, 2018). The critical friend approach involves other researchers listening to the first researcher's approach, whilst providing critical feedback by questioning the knowledge and findings of the original researcher (Smith & McGannon, 2018).

2.2.6. Data extraction and synthesis

2.2.6.1. Data extraction: identifying and recording initiation and continuing factors

Data were considered to relate to the initiation phase if it reported on individual, social and environmental factors influencing walking behaviour, and took place up to six months. Extracted data were recorded in an initiation section set up within Nvivo 11. Data were considered to relate to the continuation phase if it reported on individual, social and environmental factors, and took place from six months and beyond. Extracted data were recorded in a continuation section set up within Nvivo. For studies that contained both initiation and continuation data, data were recorded in the relevant initiation and continuation sections set up in Nvivo. For some studies, post six-month reporting was either unclear; the follow up period was less than six months (e.g follow up at three months) or the group walking activity was undertaken for less than six months. For these

studies, all extracted data were allocated to initiation factors only, even if they were referred to as adherence data within the study.

2.2.6.2. Location of data in qualitative studies

Data for qualitative studies are more difficult to isolate and extract than data location and extraction for quantitative studies, so in keeping with Thomas & Harden (2008) methodology, data were extracted from sections entitled results or findings. Data were also extracted from abstracts where possible in accordance with Thomas & Harden (2008) methodology.

2.2.6.3. Synthesis of data

The three stage thematic analysis process was undertaken for this review, according to the Thomas & Harden (2008) methodology. This enables the synthesis of findings to go beyond the content of each study within the qualitative review.

2.2.6.4. Stage one and two

At the start of the process, studies were divided into those with initiation only data, and those with initiation and continuation data. The studies were then uploaded onto NVivo 11. The purpose of stage one was to extract the relevant data by working closely with the text of each of the included studies and coding all of the data relating to findings line by line, (see appendix 8a for a screen shot) . Banks of codes were developed, and stage two of the process involved grouping banks of codes with shared meanings into sub-themes and themes. Once sub-themes were created, groups of sub-themes were then clustered under a larger theme heading. Themes and some sub-themes were given definitions to help provide a description for each initial theme. As each study was coded, new themes and sub-themes were developed until there were no new sub-themes emerging and saturation was reached. Some findings were allocated to more than one theme or sub-theme if it related to more than one subject. The first and second stages of data synthesis were initially carried out by first author NL, (see appendix 8b for examples of the data synthesis).

2.2.6.5. Stage three

The purpose of stage three was to review the themes and sub-themes in relation to the specific research questions of the review. This process was already underway during stage one and two because extracted data were being allocated to initiation and or continuing categories. Stage three also involved identifying whether factors were relevant to an individual, social or environmental context. In relation to research question one: what SEM factors are linked to the initiation phase, the first author NL identified the initiation main themes as they related to individual, social and environmental factors. This process was then repeated for research question two with its focus on continuation. In relation to research question three, any themes or sub-themes which were exclusive to either initiation or continuation were identified. Themes and sub-themes which were the same for the initiation and continuation phases were also put together. The definitions created for each theme and sub-theme were cross-checked against the specific lines of code per study to ensure accurate allocation to relevant themes. Authors AN and SF then reviewed these themes adopting the critical friend process (Green & Miyahara, 2007; Smith & McGannon, 2018). This involved first author NL and authors AN and SF meeting to discuss themes and sub-themes to test and check for accuracy of theme and sub-theme allocation. This process identified the need to make some of the theme and sub-theme headings more self-explanatory. It also identified the need to further amalgamate some of the themes and sub-themes. At the end of this process, first author NL re-checked themes and sub-themes against specific lines of code to ensure the accuracy and appropriateness of themes and sub-themes.

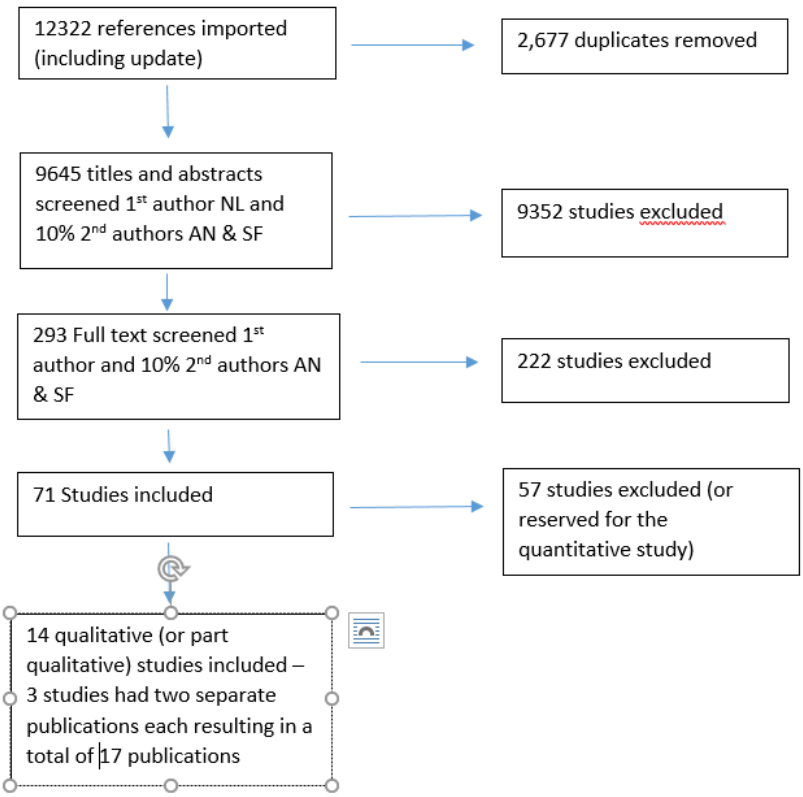
2.3. Results

2.3.1. Literature search and study descriptions

There were 14 studies included within this qualitative systematic review. See Figure 5 depicting the PRISMA flow chart of the study selection process, and Table 2 detailing the characteristics of included studies respectively. Three of the studies were represented in two separate publications each, making a total of 17 publications providing source material for the review. There were six US based studies, three from the UK and one each from China, Canada, New Zealand, Belgium and Portugal. The age of participants varied within

the studies. Four studies had a mean age of low 60s; three studies had a mean age in the region of mid to high 60s, three had a mean age within the low 70s, and three had a mean age in the low to mid 80s. One study did not report the mean and had an age range of 61 to 81.

Figure 5: Study selection PRISMA diagram



Data collection for these studies varied, with eight using interviews; two were focus group based; two undertook conversation analysis and one was a mixture of interview, focus group and group observation. The group walking depicted within these studies involved both outdoor walking and indoor walking. Eight of the studies featured outdoor walking, and six were indoors. Indoor locations included shopping malls in the US; indoor tracks in the US and Canada, or residential homes in the US. Outdoor locations included rural and urban locations within the UK, Belgium and New Zealand; village walking in Portugal; the grounds of a residential home in the US; and community parks and school campuses in China. The studies encompassed a range of cultural backgrounds including white Caucasian, Latino and East Asian. The studies also represented a mixture of interventions for health

specific conditions and healthy populations. Some of the interventions were not designated for participants with health conditions, but the majority of walkers who attended did in fact have specific health issues.

All 14 studies reported initiation data, however continuation data was only extracted from seven studies (see the intervention column within table 2 to identify those studies reporting both). Continuation data was extracted from studies where there was confirmation that participants had been attending for longer than six months.

2.3.2. Synthesis

The results synthesised from the included 14 studies were categorised to address the three research questions: 1) individual, social and environmental factors linked to initiation; 2) Individual, social and environmental factors linked to continuation; and 3) Individual, social and environmental factors that are similar or different for each phase. Table 3 depicts all themes and sub-themes identified within this systematic review, and in which studies they were evident. Ten major themes were identified, and all ten themes were relevant to both initiation and continuation phases. Table 3 also identifies all of the sub-themes linked to the themes within the initiation and continuation phases. There were 63 sub-themes identified for the initiation phase relating to individual, social and environmental factors. This contrasted to 57 sub-themes for the continuation phase. Although many of the sub-themes were the same between initiation and continuation phases, many tended to have a stronger link to either the initiation or continuation phase. There were also some sub-themes exclusive to either initiation of continuation.

A large amount of data was generated from this review, and it was considered that it would be cumbersome, excessive and potentially confusing to report on every sub-theme that was identified. Instead, a decision was made to report those sub-themes that were most consistently reported in several studies because those are the most prevalent and potentially likely to be most important to the population.

Table 2: Why do older adults start annd continue to walk in groups?

Reference	Study aim	Intervention	Setting	Sample (N, gender, age)	Method of data collection
1.2017 Carrapatoso S, Silva P, Purakom A, Novais C, Colaco P, Carvalho J The experience of older adults in a walking program at individual, interpersonal and environmental levels	To analyse the experience of participating in a walking programme at individual, interpersonal and environmental levels	10 month walking programme 3 times a week and 1 monthly special village walk – Initiation and Continuation data	Outdoor walking group in Portugal	19 Older Adults (12 in the Qual study) 10 = women and 2 men Mean age 67	Semi structured interviews @ 10 months into the prog
2. 2014 Datillo J, Martire L, Gottschall J, Weybright E A pilot study of an intervention designed to promote walking, balance, and self-efficacy in older adults with fear of falling	To identify the acceptability and feasibility of the pilot programme	8 week 3x weekly 90 min sessions called B-Active for people with a fear of falling - Initiation data only	Retirement village North Eastern United States	6 participants 4 = women and 2 = men Age 77 to 89 mean age 84	In depth interviews at the end of the 8 week intervention
3. 1995 Duncan H, Travis S, McAuley W An emergent theoretical model for interventions encouraging physical activity (mall walking) among older adults	To comprehend mall walking experiences of older adult mall walkers	Participating in mall walking at least three times a week for 30 minutes or more for at least three months – Initiation data only	Indoor mall at one specific shopping mall in West Virginia, United States	14 Older adults 5 = women and 9 = men Age range 61 to 81	Participant observations & in-depth interviews
4. 1994 Duncan H, Travis S, McAuley W The meaning and motivation for mall walking among older adults	Aims = 1) factors that influence older adults to initiate walking 2) factors influencing choices to continue walking 3) the impact of family and friends on mall walking behaviours/routines 4) how mall walking fits into overall life	Participating in mall walking at least three times a week for 30 minutes or more for at least three months 0 Initiation data only	Indoor mall at one specific shopping mall in West Virginia, United States	14 Older adults 5 = women and 9 = men Age range 61 to 81	Participant observations & in-depth interviews
5. 2017 Grant G, Pollard N, Allmark P, Machaczek K, Ramcharan P The social relations of a health walk group: an ethnographic study	The aim of this study is to understand the social relations of a walking group applying three theoretical perspectives	Regular walkers within an established walking group – Initiation and continuation data	Outdoor group in the rural British Lincolnshire countryside	19 participants 13 = women and 6 = men Age rane 58 - 89 Mean age 70 - 74 only 1 walker under 60 (Author confirmed)	Ethnographic study– tape recorded interviews and observations
6. 2017 Grant G, Machaczek K, Pollard N, Allmark P Walking, sustainability and health: findings froma study of a walking for health group	Aims of the study to identify the roles walking groups play in motivating people to start and continue to walk with groups	Regular walkers within an established walking group – Initiation and continuation data	Outdoor group in the rural British Lincolnshire countryside	19 participants 13 = women and 6 = men Mean age 70 - 74 only 1 walker under 60 (Author confirmed)	Ethnographic study – tape recorded interviews and observations

7. 2008 Green C, Miyahara M Older adults with visual impairment: lived experiences and a walking group	Aims of the study: 1. learn personal history of participants in order to interpret personal and situational factors 2.Impact of walking group on PA levels	Participants from an existing walking group for the Royal New Zealand Foundation for the Blind. Participants had been walking from between 1.5 and 3 years – Initiation and continuation data	Outdoor walking group in New Zealand with walking routes in both rural and urban areas	4 eligible participants 2 = women and 2 = men. The women aged 70 and 60 and both men aged 65	Case study interviews
8. 2008 Ingam M, Ruiz M, Mayorga M, Rosales C The Anmadora project: identifying factors related to the promotion of physical activity among Mexican Americans with diabetes	Aims of the study 1. to understand the factors that motivate successful walkers 2.Identify how their motivation could be transferred to others	A 12 week intervention where participants met 3 times per week - Initiation data only	Indoor (indoor track) and outdoor (trips into countryside) walking group in South West United States	20 participants (5 focus groups of 4 people) 85% were women and 15% men Average age of 61 years	Focus groups (at end of 12 week intervention)
9. 2015 Kassavou A, Turner A, French D The role of walkers needs and expectations in supporting maintenance in walking groups: a longitudinal multi-perspective study of walkers and walk group leaders	Aims of the study 1. Find out needs and expectations from people joining 2. How much are these needs met 3 months later? 3.How have changes in these needs have occurred?	New start walkers to a walking group are interviewed 3 months later - Initiation data only	Outdoor walking scheme in the British Midlands	8 new start walker participants (5 again at 3 months) & 8 walk leaders Mean age of walkers = 60.5 mean age walk leaders = 61.5	Semi structured interviews
10. 2017 Killingback C, Tsofliou F, Clark C Older people's adherence to community-based group exercise programmes: a multiple-case study	Aim of the study 1.Understand how and why older people have sustained long term adherence (>1 year)	Attending community based exercise programme >1 year – Initiation and continuation data	Outdoor British walking group South West of England – part of a community based exercise programme	5 participants 4 = women and 1 = man Mean age 70.5	Case studies
11. 2016 Killingback C Dissertation Older people's adherence to community-based exercise programmes: Dissertation a multiple-case study	Aim of the study 1.Understand how and why older people have sustained long term adherence (>1 year)	Attending community based exercise programme >1 year – Initiation and continuation data	Outdoor British walking group SW of England part of a comm exercise prog	5 participants 4 = women and 1 = man Mean age 70.5	Case studies
12. 2015 Lee P, Chuang Y, Chen S, Fang C, Lai H, Lee P	Aims of the study	Attending a community walking group for an	Walking group in Taipae Taiwan	48 participants 27 = women and 21 = men	Focus groups

Perspectives of brisk walking among middle-aged and older persons in community: a qualitative study	1. What kinds of factors facilitate regular walking? 2.Why did participants decide to do brisk walking ? 3. How can a walking programme be conducted and promoted in the community? 4. What do participants suggest will encourage others to engage in brisk walking?	average of 3 and a half years – Initiation and continuation data	(doesn't specify if indoors or outdoors – implies outdoors)	Mean age 62.3	
13. 2013 Pelssers J, Delecluse C, Opdenacker J, Kennis E, VanRoie E, Boen F "Every step counts": effects of a structured walking intervention in a community-based senior organization	Aims of the study: 1.would the intervention result in significant increases in PA 2.Would the intervention result in significant increases in well-being? 3. Reasons for maintained participation	Attending a local community based walking based intervention with some group walks – assessed after 10 weeks - Initiation data only	Outdoor walks in Flanders in Belgium	432 participants (unclear how many participants took part in the qualitative aspect of the study) Mean age 69.40	Qualitative element was interviews
14. 1996 Ready A Walking program maintenance in women with elavated serum cholesterol	Aim of the study 1.To identify factors that assisted or hindered in maintaining a regular walking programme	Followed up 12 months after completing a supervised walking programme 5 days a week (3 of the 5 were supervised) – Initiation and continuation data	Indoor walking group in Canada	29 participants all women Mean age 61.5	Open ended questions
15. 2000 Resnick B, Spellbring AM Understanding what motivates older adults to exercise	The study aims: 1.Compare the differences in motivation, efficacy expectation & 8 dimensions of health 2.Explore factors that influenced adherence to the walking programme	Data was collected at least six months after the initiation of walking with the group– Initiation and continuation data	Walking group in United States in a care retirement community	23 members of an existing walking group Mean age 81	Open ended interviews
16. 2011 Shea S Effects of a dog walking program with older adults in long term care	The study aim 1.Identify if older adults assigned to walk with a buddy and assistant dog (control group -a buddy without a dog) experience human animal interaction thus enhancing motivation to adhere to programme	The intervention was three walks a week for 6 weeks - Initiation data only	Outdoor walking in the grounds of a the long term care home facility with a buddy and a therapy dog in the United States	30 participants 20 = women and 10 = men Mean age 72.3	Anecdotal conversations between participants and the lead researcher at the end of the intervention
17. 2003 Taylor L, Whittington F, Hollingsworth M, Ball M, King S, Patterson V, Diwan S, Rosenbloom C, Neel A Assessing the effectiveness of a walking program on physical function of residents in an assisted living facility	The study aim 1.To increase/maintain residents' strength, gait, balance and endurance 2.Participant thoughts and opinions about the programme to assist ongoing involvement	A nine week intervention – a resident led initiative - Initiation data only	Indoor walking group within the care home facility in the United States	14 women Age range 62 – 99 Mean age 80	Open ended questions for the qualitative aspect of the study

More specifically, sub-themes reported on by at least five studies within the review for either initiation or continuation phases, or both are explained here in more detail. Five studies equates to over a third of studies within the review. The themes and sub-themes meeting the above level of reporting explained above are now analysed in more detail.

In reporting the detailed findings for this systematic review below, each research question will be addressed in turn, with the order of 1) initiation, 2) continuation, 3) similarities and differences between phases. These themes and sub-themes are also represented within their specific ecological framework context. Each theme and sub-theme is also reinforced with supporting quotes from included studies. Some of these quotes are directly from participants within these studies, and some are from the authors interpreting their results.

2.3.3. RQ1: What individual, social and environmental factors are linked to the initiation phase of older adults walking with organised walking groups?

2.3.3.1. Individual context themes and sub-themes explained within the initiation phase

Figure 6 below identifies the seven themes and 16 sub-themes relating to the initiation phase for all three contexts within the ecological framework. Within the individual context, there were three themes and four sub-themes linked with initiation.

2.3.3.1.1. Physical health

The theme of physical health was defined as a human state characterised by full anatomic and physiologic function, the ability to perform activities of daily living, and the ability to deal with physical and biological stress. Within the initiation phase, there were nine sub-themes. Two are detailed below because they were cited by at least five studies within the individual context.

2.3.3.1.1.1. Achieve or maintain fitness and physical function

This sub-theme was one of the most reported sub-themes within the review. This sub-theme was depicted as the desire of group walkers to either improve or maintain a whole range of physical functions or abilities contributing to physical health. From an initiation

perspective, it was important for participants to undertake an activity such as group walking to improve or maintain functions and abilities such as aerobic fitness, strength, balance, walking ability and flexibility. One participant in the Kassavou et al. study explained a trigger for joining a walking group: “I thought I’ve got to start improving my fitness”.

2.3.3.1.1.2. Protect against and manage health conditions

This theme incorporated a desire to avoid health related decline as an incentive for joining a walking group. This was summed up by a participant in the Grant et al. study: “I slipped my disc 10 years ago, so I’m a great believer in pre and post that event that you’ve got to keep walking, keep moving”.

2.3.3.1.2. Mental health

The theme mental health included issues relating to emotional, behavioural health, well-being and the absence of mental or behavioural disorders. There were 11 sub-themes related to this theme within the initiation phase, with one recorded in at least five; self-efficacy.

2.3.3.1.2.1. Experience of self-efficacy

This sub-theme was one of the most recorded sub-themes in this study. Self-efficacy was experienced as growing in capability and confidence. From the initiation perspective, self-efficacy related to a growing self-confidence, leading to a sense of mastery. This was explained by the authors in the Ingram et al. study: “Mastery or the growing self-confidence that one experiences as he or she successfully engages in an activity, was most frequently expressed by participants”.

Table 3: Included studies reporting key themes and sub-themes for the initiation and continuation phases

INITIATION PHASE			
Key theme	**Sub theme**	**Studies reporting each sub-theme (numbers relate to the studies detailed in table 1 study characteristics)**	**Total studies reporting each sub-theme**
Individual – factors related to personal characteristics of group walkers (1)	1. Ability to overcome barriers	1	1
	2. Sense of determination	1, 7, 8, 17	4
	3. Motivation/desire to keep going	2, 6, 8, 9	4
	4. Creates a routine/work replacement	2, (3 & 4), 6, 8	4
	5. History of walking	5, 7, 10, 17	4
	6. Ability to set goals	2, 4, 8, 9	4
	7. Ability to be self-directed	4, 6, 11	4
Individual – physical health (2)	1. Desire to perform activities of daily living	6, 7, 11, 12	4
	2. Protect health/manage health conditions	2, (3 & 4), 6, 8, 9, 17	6
	3. Achieve/improve/maintain walking, aerobic function/ fitness/flexibility	2, (3 & 4), 6, 7, 8, 9, 11, 17	8
	4. Perception of exercise benefits	15	1
	5. Desire to lose weight/keep in shape	8, 9	2
	6. Maintenance of independence	1, (3,4), 8,9	4
	7. Start to be more active	(3, 4)	1
	8. Maintain independence	(10,11)	1
	9. Start to be more active/less sedentary	(3, 4) (10,11)	1 2
Individual – mental health (3)	1. Fear of falling	15,17	2
	2. Feeling less tired/ more energy/ better sleep/stimulated	4, 8	2
	3. Avoidance of mental ill-health	1, 4,(5,6)	3
	4. Perception of mental health benefits	4, 6, 17	3
	5. Positive/improved mood	4	1
	6. Psychological health	4, 6, 17	3
	7. Self-efficacy	2, (3,4), 6, 7, 8, 9, 16, 17	8
	8. Sense of achievement/pride	2, 9, 16, 17	4
	9. Well-being/feel good factor	2, 4, 8, 17	4
	10. Stress reduction/more relaxed	4, 17	2
	11. Ability/desire to make choices/have control	3, 11	2
Individual – the importance of walking (4)	1. The importance, enjoyment and pleasure of walking	2, 3, (5,6), 7, 12, 17	6
Social – social aspects (5)	1. The importance of chat/conversation	(3,4), (5, 6), 8, 9, 13, 16, 17	7

	2. Sense of belonging/shared identity/ commitment to group	(3,4), 8, 17	3
	3. Companionship/friendship/new friends	2, (3,4), (5,6), 8, 9, 11, 13, 17	8
	4. Fun, laughter, enjoyment	2, 4, 6, 8, 9	5
	5. Sense of community	1, (3,4), 6, 8, 9, 17	6
	6. Social connectedness	2, (3,4), 6, 9, 12, 16, 17	7
	7. Social support & persuasion walk leaders	1, (5,6), 8, 9, 10, 12, 17	7
	8. Social support and persuasion from fellow walkers	1, 4, 5, 8, 9, 12, 16, 17	8
	9. Social support and persuasion from health professionals	(3,4), 8, (10,11)	3
	10. Social support and persuasion same health condition	7, 8	2
	11. Social support and persuasion friends/family	(3,4), 9	3
	12. Social similarities	4, 9	2
Social – characteristics of the walk leader (6)	1. Persona of the walk leader (expert, professional, enthusiastic, maintains safety)	3, (5,6), 9, 11,12, 17	6
	2. Engenders confidence	(5,6), 9, 11	4
	3. Cares for walkers	(5,6), 8, 9, 17	4
Environment – aspects of the programme (7)	1. Free/inexpensive	5, (10,11), 12	3
	2. Regularity and variety of walking	2, 4, 6, 11, 16, 17	6
	3. Programme structure: friendly, flexible, accommodating, inclusive of abilities, health, other activities	2, 3, 4, (5,6), 10, 11, 17	7
	4. Publicity of walking group	12	1
	5. Opportunity to measure distance walked	2, 4, 9, 17	4
	6. Group led by expert	3,6	2
	7. Walking incorporated other activities eg stretching	2, 11	2
	8. Friendly competition	8, 9, 17	3
	9. Opportunity to be in gender groups	4	1
Environment – the physical environment (8)	1. Safety: appropriate terrain/personal safety	(3,4), (5,6), 7, 16, 17	5
	2. Opportunity to walk outdoors/beauty of outdoors	1, 2, 6, 7, 16	5
	3. No traffic/cars	4	1
	4. Personal safety	(3, 4), 6	2
	5. Pleasant environment	4	1
	6. Opportunity to walk indoors	4, 17	2
Environment – importance of the group (9)	1. Benefits of the group: friendlier, not alone, distracting	6, 8	2
Environment – opportunity for dog walking (10)	1. Dog facilitated social contact	7, 16	2
	2. Companionship with dogs	16	1
	3. Dogs assisted walking	7	1
	4. Dog motivates to continue walking	16	1
	5. Dog enhanced walk experience	16	1

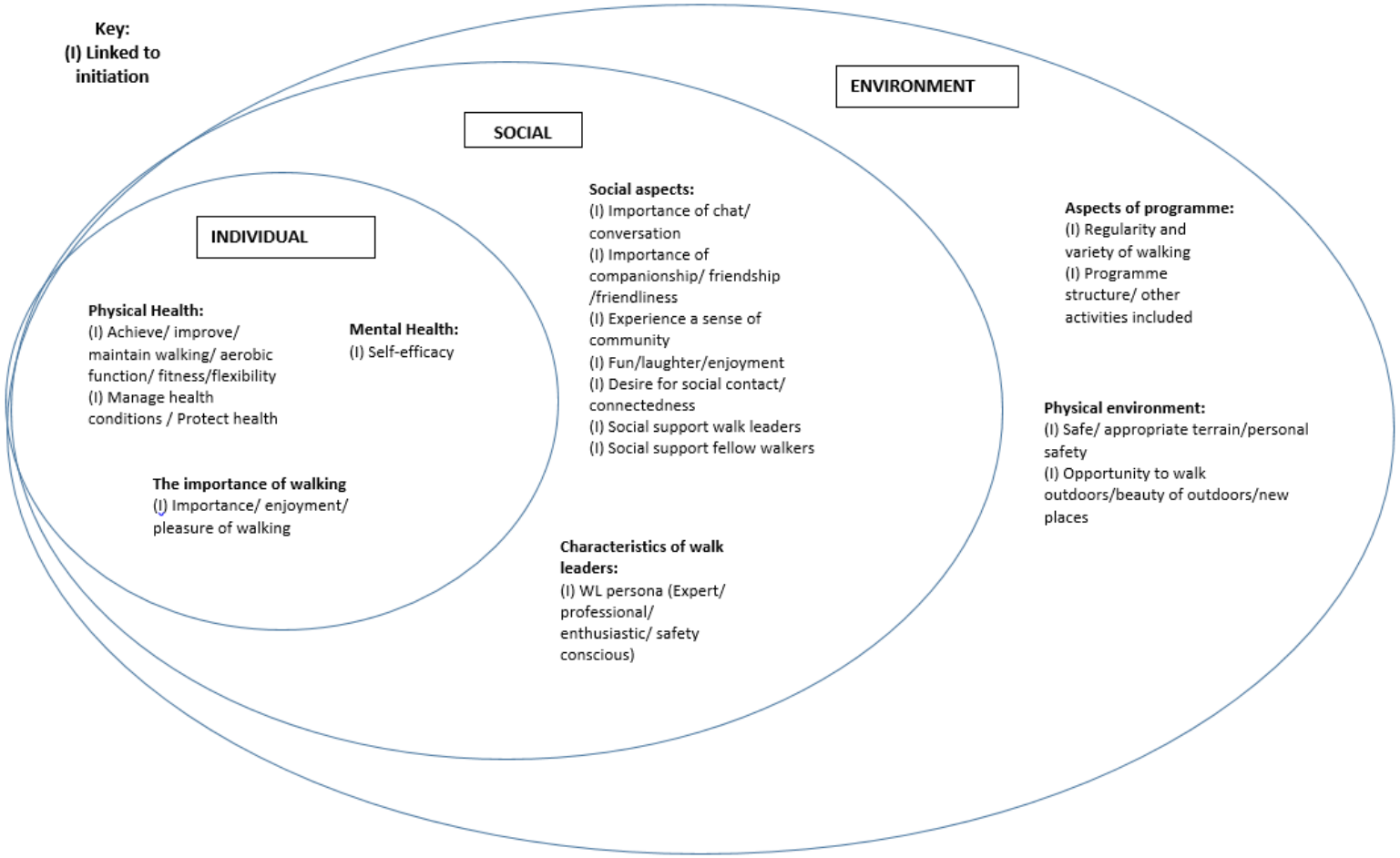
CONTINUATION PHASE			
Individual – factors related to personal characteristics of group walkers (1)	1. Ability to overcome barriers 2. Sense of determination 3. Motivation/desire to keep going 4. Creates a routine/work replacement 5. History of walking 6. Ability to set goals 7. Ability to be self-directed	6,11,15 6,7,11,15 5,7,11,14,15 (5,6), 11, 12, 14 15 15 11	3 4 5 4 1 1 1
Individual – physical health (2)	1. Desire to perform activities of daily living 2. Protect health/manage health conditions 3. Achieve/improve/maintain walking, aerobic function/ fitness/flexibility 4. Perception of exercise benefits 5. Desire to lose weight/keep in shape	1,15 (5,6), 10, 11, 12 15 1, (5,6), 7, 10, 12, 15 15 1, (10,11), 12, 14, 15	2 5 6 1 5
Individual – mental health (3)	1. Fear of falling 2. Feeling less tired/more energy/ better sleep/stimulated 3. Avoidance of mental ill-health 4. Perception of mental health benefits 5. Positive/improved mood 6. Psychological health 7. Self-efficacy 8. Sense of achievement/pride 9. Well-being/feel good factor 10. Stress reduction/more relaxed 11. Feeling better in self 12. Keep busy as a distraction 13. Ability/desire to make choices/have control	11 1, (5,6), (10,11), 12, 14 1 6, 12, 15 (10,11) 12 1,6, 7, 8, (10,11), 12,15 (10,11), 15 1, 6, 7, (10, 11), 12, 15 1 7, 14, 15 1 11	1 5 1 3 1 1 7 2 6 1 3 1 1
Individual – the importance of walking (4)	1. The importance, enjoyment and pleasure of walking	1, 6, 7, (10,11), 12, 15	6
Social – social aspects (5)	1. Importance of chat/conversation 2. Sense of belonging/ shared identity/commitment to group 3. Companionship/friendship/new friends 4. Fun, laughter, enjoyment 5. Sense of community 6. Desire for social connectedness 7. Social support and persuasion from walk leader 8. Social support and persuasion from fellow walkers 9. Social support and persuasion health professional 10. Social support and persuasion same health condition	(5,6), 7, (10,11) 12 1, (5,6), 7, (10,11), 12, 14 (5,6), 7, (10,11), 12 1, 5, 7, (10,11), 12 (5,6), 7, (10,11), 12 1, (5, 6), 7, (10,11), 12 1, (5,6), 7, 10, 12 1, (5,6), 7, (10,11), 12, 14 14 7, 10	4 6 4 5 4 5 4 6 1 2

	11. Social support and persuasion friends/family 12. Social similarities	1, 14 (5,6), 7, 11	2 4
Social – characteristics of the walk leader (6)	1. Persona of the walk leader (expert, professional, enthusiastic, maintains safety) 2. Engenders confidence 3. Cares for walkers	1, 6, 7, 10 1, 6, 10 6, 7, 10 6, 10	4 3 3 2
Environment – aspects of the programme (7)	1. Free/inexpensive 2. Regularity and variety of walking 3. Programme structure: friendly, flexible, accommodating, inclusive of abilities, health, other activities 4. Walks are accessible, within community 5. Special places to visit 6. Walking more preferable than gym	4, 6, 11 (5, 6), 7, 12 (5,6), 7, (10, 11), 12 6,10 1, (5,6) 11	3 3 4 2 2 1
Environment – the physical environment (8)	1. Safety: appropriate terrain/personal safety 2. Opportunity to walk outdoors/beauty of outdoors 3. No traffic/cars 4. Personal safety 5. Pleasant environment 6. Fresh air	1, 5, 7, 11 1, (5, 6), 7, 11 1 1, 5 1, 5 1, 6	4 4 1 2 2 2
Environment – importance of the group (9)	1. Benefits of the group: friendlier, not alone, distracting from exercise	1, (5,6),(10,11), 12, 15	5
Environment – the opportunity for dog walking (10)	1. Dogs enhanced social contact/ social experience 2. Dogs enhanced the fun 3. Dogs need to be walked	(5,6), 7, 16 5 7	3 1 1

64 sub-themes relating to initiation

57 sub-themes relating to continuing

Figure 6: What individual, social and environmental factors are linked to the initiation phase of older adults walking with organised groups? Reported themes in at least five studies:



2.3.3.1.3 The importance of walking

This theme was defined as the appeal, enjoyment and considered importance of walking as a form of physical activity.

2.3.3.1.3.1. The importance, enjoyment and pleasure from walking

This sub-theme especially related to a discovery or reminder of how enjoyable walking can be during the initiation phase as depicted by a participant within the Ingram et al. study: “I thought all that walking fun, I enjoyed that”.

2.3.3.2. Social context themes and sub-themes explained within the initiation phase

The social context contains two themes. The first is social aspects, containing seven sub-themes detailed below. The second is the characteristics of the walk leader, containing one sub-theme, also detailed below. The social themes and sub-themes are amongst the most recorded within the included studies. As such, it is the largest context defined within the ecological framework.

2.3.3.2.1. Social aspects theme

The theme called social aspects has 12 sub-themes within the initiation phase, with seven reported by five or more studies and therefore detailed below.

2.3.3.2.1.1. The importance of chat/conversation

This sub-theme depicted group walkers’ desires to have opportunities to chat and have conversation with others. The opportunity to chat with fellow walkers is recognised as important to ongoing participation within the initiation phase by a walker from the Pelssers et al. study: *“*Walking and talking with friends was a major reason for maintained participation”. Duncan et al. participants also referred to the ability and enjoyment of “telling some splendiferous tales”.

2.3.3.2.1.2. The importance of companionship/friendship/new friends

This sub-theme is depicted by the importance of companionship, but extends more deeply

into developing aspects of friendship and new friends. There is a strong sense of feeling good about being with companions and friends, with the prospect of developing secure new friendships. This was explained by a walker in the Duncan et al. study: “My pace partners were considered reliable and valued companions, with whom intimate information was shared and advice sought”.

2.3.3.2.1.3. Experience a sense of community

This sub-theme depicted group walkers’ desires to have a strong link to the community, and how that can build a sense of place within the community. A walker in the Duncan et al. study defined it as follows: “The older adults at the mall created a community with one overarching interest” (walking).

2.3.3.2.1.4. Desire for social contact/connectedness

This sub-theme is closely connected to companionship and friendship. This sub-theme depicted that initial drive to have some social contact and a connection to others as a motivation to be involved with group walking. Desire for social contact was recognised by the authors of the Duncan et al. study: “Both of these women felt that many of their needs for social contact and connection were met through the mall walking activities”. Similarly, the authors of the Kassavou et al. study reported that “both walkers and walk leaders acknowledged that walkers joined walking groups to feel socially connected”.

2.3.3.2.1.5. Support and persuasion from walk leaders

This sub-theme was very similar to social support from fellow walkers, but it also relates to the enthusiastic support and encouragement of walk leaders in relation to maintaining attendance. A walker from the Kassavou et al. study described this as follows: “He is very encouraging, he is a very nice man, of course because he is enthusiastic, you feel like you don’t want to let him down”.

2.3.3.2.1.6. Social support and persuasion from fellow walkers

This sub-theme is depicted by a sense of support and encouragement experienced by walkers from fellow walkers. This sub-theme is one of the most highly recorded by studies within this review. The types of support detailed in the studies related to fellow walkers waiting to meet up with other participants, offering additional support and encouragement, especially through ill-health or infirmity. There seemed to be a general sense of supportive inclusion by others. This was explained by a participant in the Carrapatoso et al. study: "I didn't used to speak to anyone and I was very shy. I still am, but other participants draw me out".

2.3.3.2.1.7. Fun, laughter and enjoyment

This sub- theme related to how much group walkers seemed to experience fun and enjoyment in being with others in a group setting. This was recorded by an author on the Duncan et al. study watching participants during refreshments after the walk: "They sat joking, talking, laughing, greeting other walkers".

2.3.3.2.2. The characteristics of walk leaders

This social factor was defined as the characteristics, attributes and personality of the walk leader.

2.3.3.2.2.1. Persona of the walk leader

One of the participants within the Ingram et al. study identified the sense of comfort experienced due to walk leader contact during the initiation phase, and remembered the walk leader contacting them about attending the session and saying: "You know that we will wait for you, you know that we will be here".

2.3.3.3. The environmental context themes and sub-themes explained for the initiation phase

The environmental context has two themes that relate to the initiation phase. Firstly, aspects of the programme which has sub-themes called regularity and variety of walking, and programme structure. Secondly, the physical environment, with sub-themes called

safe, appropriate terrain and opportunity/beauty of walking outdoors/new places, detailed below.

2.3.3.3.1. Aspects of the programme

This environmental theme is defined as characteristics of the programme which relate to its design, structure, delivery, accessibility and location. Its two sub-themes are listed below.

2.3.3.3.1.1. Regularity and variety of walking

This sub-theme depicted the group walkers' approval of the regularity of the walking opportunities, and an enjoyment of a mixture and variety of walking locations. "The discovery of new places" was described as important during initiation for a participant within the Grant et al. study.

2.3.3.3.1.2. Programme structure: friendliness, variety, inclusiveness and flexibility

This sub-theme had the highest number of recorded studies within the environmental sub-themes, with seven studies recording it during the initiation phase. Group walkers appreciated and enjoyed the friendly nature of the walking group experience, where there was an ethos of group inclusiveness and tolerance for a spectrum of health issues, differing levels of competence, and abilities. Walkers also enjoyed the programme structure where additional activities were incorporated within the programme. There was also an appreciation for facilities supporting walking such as toilets and refreshment facilities. This sub-theme was illustrated by a walker within the Taylor et al. study who reported: "The chance to walk in more adventurous terrain due to available support was also a bonus".

2.3.3.3.2. Factors related to the physical environment

This environmental theme was defined as aspects and characteristics of the physical environment in which walking takes place.

2.3.3.3.2.1. Safe, appropriate terrain and personal safety

This sub-theme depicted group walkers' appreciation for the safety checks relating to terrain and the accessibility of safe terrain to walk within. This theme also related to aspects of the environment that alleviated personal safety fears, such as walkers' fears and vulnerabilities related to walking alone. A walker from the Taylor et al. study defined the importance of safety as a factor: "Environmental hazards are reduced to minimize the likelihood of falls".

2.3.3.3.2.2. Opportunity to walk outdoors/beauty of outdoors and new places

For those outdoor walking groups, this sub-theme incorporated group walkers' desires to get outside, to be in the fresh air, to experience the beauty of the outdoors, including an opportunity to explore new places. This sub-theme was illustrated by a walker in the (Shea, 2011) study based within a residential facility, who explained the desire for ongoing walking during the initiation phase of walking was due to: "Motivation to adhere to the program is the opportunity to leave the home".

2.3.4. RQ2: What individual, social and environmental factors are linked to the continuation phase of older adults walking with organised walking groups?

Figure 7 below identifies the six themes and 13 sub-themes relating to the continuation phase for all three contexts within the ecological framework. There were four themes attached to the individual context, and one each for the social and environmental contexts, detailed below.

2.3.4.1. Individual context themes and sub-themes explained within the continuation phase of older adult group walking

The four themes within the individual context for the continuation phase are: personal characteristics, physical health, mental health and the importance/pleasure of walking.

2.3.4.1.1. Personal characteristics

This theme was characterised by the personal attributes and personality of participants. There was one sub-theme that was evident in five or more studies and reported below.

2.3.4.1.1.1. Motivation/desire to keep going

Motivation, desire to keep going was depicted by personal drive and a desire to stay active. The drive to keep going resulted in the ability to overcome barriers, demonstrating an inner motivation to persist with the walking group. The Killingback et al. study authors observed this in participants: “There is an appreciation among participants that a personal level of discipline and motivation was needed to stay active” .

2.3.4.1.2. Physical health

2.3.4.1.2.1. Achieve or maintain fitness and physical function

This sub-theme was also linked to initiation and defined within that section. From a continuation perspective, this sub-theme highlighted the improvement to both fitness and function as a result of walking during the earlier phase of walking. This is observed by an author of the Carrapatoso et al. study as: “Participants perceived improvements to their body weight, agility, strength and flexibility”.

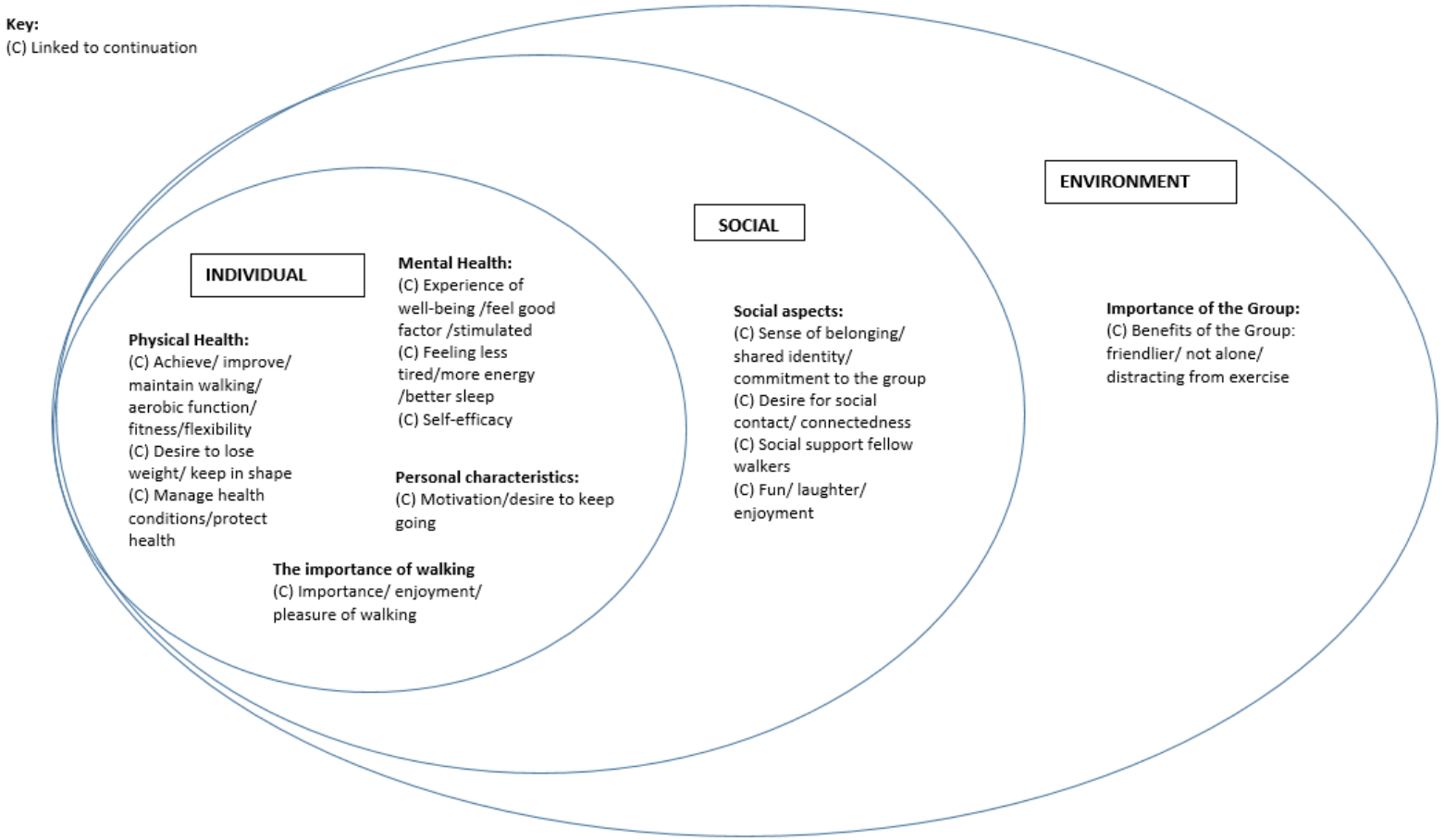
2.3.4.1.2.2. Manage health conditions/protect health

Similarly to achieving and maintaining fitness, this sub-theme is also linked with initiation. In relation to continuation, managing health conditions and protecting health was also reported as having improved due to the walking undertaken within the initiation phase. The authors of Resnick & Spellbring study reported: “The exercise helps them manage chronic health conditions such as neck and back problems”.

2.3.4.1.2.3. Desire to lose weight/keep in shape

This sub-theme was depicted by group walkers’ desire to maintain a healthy body weight or shape. In many cases, participants wanted to continue walking in groups in order to lose weight, or in many cases maintain weight loss achieved within the initiation phase of walking. A participant in the Killingback et al. study described this as: “In the first six months I lost over a stone in weight and I got a lot healthier”.

Figure 7: Which individual, social and environmental factors are linked to the continuation phase of older adults walking with organised groups?



Note: Reported themes and sub-themes in at least five studies

2.3.4.1.3. Mental health

There were three sub-themes within the continuation phase.

2.3.4.1.3.1. Experience of well-being, feel good factor/stimulated

Group walkers experiencing this sub-theme spoke about it as an excitement resulting in a 'buzz' as a consequence of walking and being with people. Walking brought on a sense of well-being, feeling good, and in some cases a form of happiness and contentment. This sensation was expressed by a participant in the Resnick & Spellbring study: "I generally feel good all day after I have walked".

2.3.4.1.3.2. Feeling less tired, more energy, better sleep

This sub-theme was described by participants as a feeling of being more energised and less tired. Many participants connected this with better sleep following a walking session. A walker in the Lee et al. study reflected on the impact of sleep as a result of walking: "I sometimes could not sleep. Then I would go to the park and walk. Then I went back and took a shower. I would have a good night's sleep".

2.3.4.1.3.3. Self-efficacy

This sub-theme was also reported within the initiation phase and is defined within that section. Like the initiation phase, self-efficacy was one of the largest recorded sub-themes within the continuation phase of older adult group walking. From a continuing point of view, self-efficacy was referred to by participants as a growing sense of confidence and pleasure in their walking ability and distance as a consequence of regular walking during the initiation phase. This was described by a walker in the Carrapatoso et al. study: "I never thought I would be able to hike at this stage. But now I walk around the villages for several kilometres. I never thought that I could walk so much, but yes I can do it".

2.3.4.1.4. The importance of walking

2.3.4.1.4.1. Importance, enjoyment and pleasure from walking

This sub-theme is also depicted within the initiation section and is defined there. From a continuation perspective a walker within the Lee et al. study explained the desire to keep walking was because: "Brisk walking has a charm for me". This was reinforced by a

participant in the Grant et al. study who said: “Oh, coz I thoroughly enjoy it. I would not dream of stopping.”

2.3.4.2. The social context themes and sub-themes explained within the continuation phase of older adult group walking

The social context themes have already been defined within the initiation phase.

2.3.4.2.1. Social aspects

This theme has been defined within the initiation phase. There are four sub-themes recorded in relation to continuation.

2.3.4.2.1.1. Sense of belonging/shared identity/commitment to the group

Group walkers expressed an enjoyment of belonging to a walking group, and feeling a sense of shared commitment to the activity and the group itself. There was also a shared sense of interests, common characteristics and values between participants. This sense of identity with the group also developed into a growing sense of commitment. Authors of the Killingback et al. study observed this as: “There was an awareness of varying levels of ability…this appeared to add a sense of belonging, since none of them was the odd one out”.

2.3.4.2.1.2. Fun, laughter and enjoyment

This sub-theme was also reported within the initiation phase of group walking and is defined in that section. From a continuation perspective, this sub-theme focused on the build-up of fun and enjoyment as participants became better acquainted and familiar with each other. This was described by the author of the Grant et al. study as: “Almost all of those interviewed said that a key factor in their decision to continue walking with the group was the sheer fun and enjoyment of the experience”.

2.3.4.2.1.3. Social support – fellow walkers

This sub-theme was also recorded within the initiation section and is defined there. In relation to continuation, social support from fellow walkers reflected a development of the friendship and support into a stronger bond. This was observed by the authors of the Grant

et al. study as: “There were frequent occasions where feelings of mutual concern for fellow walkers developed into something tangible”.

2.3.4.2.1.4. Desire for social contact/connectedness

This sub-theme was also reported within the initiation phase, and is described within that section. In relation to continuation, this sub-theme highlighted the opportunity to develop a sense of connectedness over time as a result of building relationships with others. This was explained by a participant within the Lee et al. study: “Brisk walking can build relationships among neighbors. It is an event to bring community residents to walking places and make connections with each other”.

2.3.4.3. The environmental context themes and sub-themes explained within the continuation phase of older adult group walking

The environmental context is described in the initiation phase and has one theme: factors related to the importance of the group. Its sub-theme is called benefits of the group – friendlier/not alone/distracting from exercise detailed below.

2.3.4.3.1. Importance of the group

This environmental theme is defined as characteristics and aspects pertaining to the group context of walking.

2.3.4.3.1.1. Benefits of the group: friendlier/not alone/distracting from exercise

This sub-theme featured a range of benefits linked to the group environment. Being part of a group was seen to distract from the hard work of undertaking physical activity. Similarly, the group was perceived to be a friendlier physical activity environment, providing a sense of togetherness, and a more inclusive way to undertake walking. The group protected some participants from the perceived loneliness of exercising alone. Authors of the Killingback et al. study explained this as: “Participants appreciated exercising as a group opposed to the perceived impression of the lone nature of the gym where ‘nobody talks to you’”.

2.3.5. RQ 3: Are there any similarities and differences in the individual, social and environmental factors associated with the initiation and continuation phases of older adult group walking?

2.3.5.1. Similarities in the individual, social and environmental factors linked to initiation and continuation of group phases of older adult group walking

Figure 8 detailed below illustrates the four themes and seven sub-themes that are recorded by at least five studies, and are present in both the initiation and continuation phases of group walking. All ten themes and most of the sub-themes throughout the systematic review are present in both phases once all recording is taken into account. As such, there are more similarities in factors present in both phases than differences. The sub-themes that are reported in both phases in at least five studies, as illustrated in figure 5, are detailed below.

2.3.5.1.1. Similarities within the individual context

In relation to physical health, both improving and maintaining fitness and function plus managing health conditions and protecting health are present in both phases. Self-efficacy within mental health is also present in both phases. These physical and mental health sub-themes were some of the most reported within the systematic review for both phases of walking, and significant to the initiation and continuation of older adult group walking. The theme of importance of walking also had one sub-theme present in both phases – the enjoyment and pleasure of walking. This indicates that some physical health, mental health and importance of walking sub-themes are important to both phases of walking.

2.3.5.1.2. Similarities within the social context

The sub-themes of social support –fellow walkers, fun/laughter/enjoyment and a desire for social connectedness were also present in both initiation and continuation phases. Social support from fellow walkers was also one of the largest sub-themes reported in the study consistently between both phases. This indicates that some social sub-themes are important to both phases.

2.3.5.1.3. Similarities within the environmental context

There were no sub-themes within the environmental context that were reported in at least five studies in both the initiation and continuation phases of walking. Although there are some environmental sub-themes reported on by more than five studies within the systematic review, the specific sub-themes do not overlap. This indicates that environmental sub-themes are more phase specific.

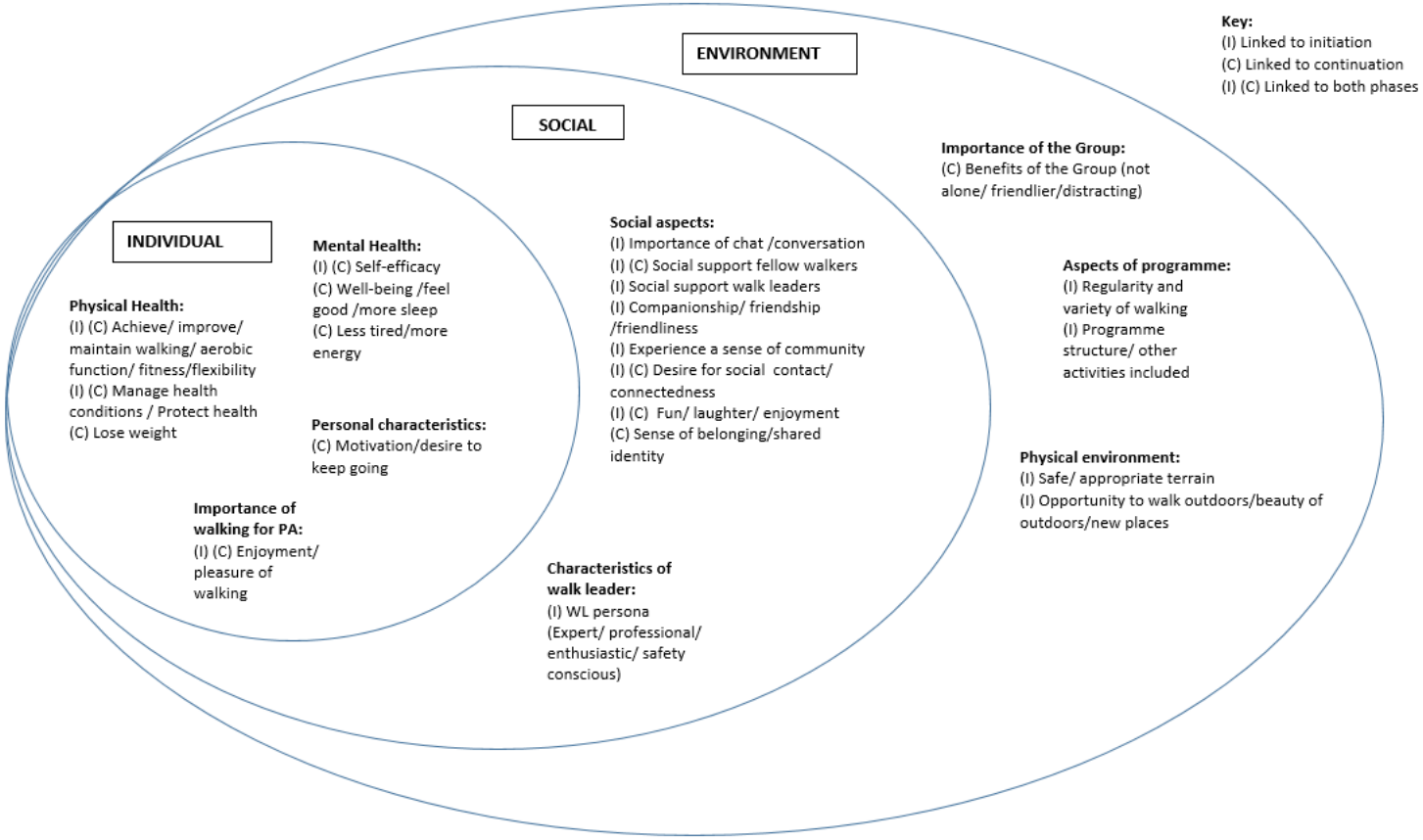
2.3.5.2. Differences in the individual, social and environmental factors linked to the initiation and continuation phases of group walking

Although there are many similarities between phases of group walking, there are also numerous differences.

2.3.5.2.1. Differences within the individual context

Within the individual context, three themes contained at least one sub-theme that was present in continuation only in five studies or more. The sub-themes lose weight (physical health); well-being/feel good and less tired/more energy (mental health); and motivation/desire to keep going (personal characteristics) were all present in continuation only. As such, it indicates that themes within the individual context are particularly important to the continuation phase. All of these sub-themes have specific elements that may need time to develop, such as the development of well-being and a motivation to keep going, once an activity is already underway.

Figure 8: Are there any similarities and/or differences in the individual, social and environmental factors linked with the initiation and continuation phases of older adult group walking?



Note: Reported themes and sub-themes in at least five studies

2.3.5.2.2. Differences within the social context

Within the social context, there were two themes that had six sub-themes present in either initiation or continuation. In contrast to the individual context, the sub-themes that were different within this context were more likely to be within the initiation phase. Within social aspects, the sub-themes importance of chat; social support from walk leaders; companionship/friendship; and a sense of community were all present within initiation. This suggests that many of the earlier social experiences and interactions are especially important during the first few months of starting to walk with a group. A sense of belonging was present in continuation, and indicates that it takes more time to build up a sense of being fully part of a group, and its participants. The sub-theme the persona of the walk leader, attached to the theme characteristics of the walk leader, was similar to social support from the walk leader and was present within initiation. The expert, professional and safety conscious walk leader is particularly appreciated by walkers when they first experience the group.

2.3.5.2.3. Differences within the environmental context

Within the environmental context, the extent of difference was the largest, with no sub-themes present in five or more studies in both phases. The themes aspects of the programme and physical environment only had sub-themes present within the initiation phase of walking. Regularity/variety and programme structure (aspects of the programme) together with safe appropriate terrain and opportunity/beauty of outdoors (physical environment) are all present within initiation. This suggests that the programme itself and safe and varied outdoor walking are a real draw to initiate walking with a group. In contrast, the sub-theme benefits of the group, attached to the theme importance of the group is present only in continuation. This indicates that it takes time for walkers to really begin to appreciate key aspects of being within a group, such as not being alone, preferring the friendship offered by a group context and the distraction from the exercise itself.

2.4. Discussion

Group walking may offer a format whereby older adults can enhance PA. Understanding the reasons why older adults initiate and continue to walk in groups, and whether there are similarities and differences in these time points, could inform and enhance recruitment and retention of older adult participants to walking groups. The purpose of this systematic

review was to synthesise existing qualitative studies to identify why older adults initiate and continue walking in organised groups. For the purposes of this review, the initiation phase was categorised as up to six months of walking. The continuation phase was categorised as six months plus. This review also aimed to identify the individual, social and environmental factors related to initiation and continuation phases of older adult group walking; and the similarities and differences within each of these phases.

2.4.1. What individual, social and environmental factors are linked to the initiation phase of older adults walking with organised groups?

In relation to research question one: what individual, social and environmental factors are linked to the initiation phase of older adult group walking, there were seven themes and 16 sub-themes present within this phase that were reported on by five studies or more. Half of the sub-themes, (eight) were within the social context, with four each in the individual and environmental contexts. This finding suggests that the social context is especially important for the initiation phase and will be discussed in more detail during the social context section which follows on from the individual context. Firstly, looking at the individual context in more detail, the themes of physical health, mental health and the enjoyment of walking were present within the initiation phase. From the physical health perspective, achieving and improving fitness and walking, plus managing and maintaining health conditions were linked to the initiation phase. This suggests the important focus for older adults, as the ageing process increases, on maintaining and improving their fitness and function, and seeking out activities that may help with this. The need to manage ongoing health conditions also reflects that health conditions may be manifesting in later life, and finding activities to help minimise or manage those conditions is an important reason for joining a walking group. These themes have been associated with physical activity initiation in the older adult literature, especially as age increases (Solberg, Hopkins, Ommundsen, & Halvari, 2012). In fact some of the older adult literature states that physical health reasons are the most important factor for starting PA activities (Scott et al., 2015; Stiggelbout, Hopman-Rock, & van Mechelen, 2008).

From a mental health perspective, the sub-theme self-efficacy was also strongly present within the initiation phase. Self-efficacy was one of the biggest sub-themes within this systematic review, with eight of the 14 studies highlighting it in relation to initiation. It is evident that the increasing sense of confidence and capability were especially important during the initiation phase, where a growing sense of mastery in walking activities resulted from growing self-confidence to walk with others for longer distances. The importance of this sub-theme to the initiation phase may be connected to the length of the initiation phase, being up to six months. This length of time enables walkers to experience improvements in ability and a subsequent growth in confidence in both ability and sense of self. The literature review identifying older adult determinants of PA initiation and maintenance within an older adult population also highlighted the importance of self-efficacy, with a stronger association with initiation than continuation (van Stralen et al., 2009). Additional older adult literature also identifies self-efficacy as an important factor in determining walking behaviour (Buman et al., 2010; Nies & Motyka, 2006). One aspect of self-efficacy within the older adult PA literature is its link to the increasing desire to maintain independent living (Solberg, Halvari, & Ommundsen, 2013). Being confident and competent in walking ability facilitates walking capacity and maintains physical function (Franco et al., 2015; Grant et al., 2017a). As such, the need to rely on family or assisted living is reduced (Solberg et al., 2013). Similarly, self-efficacy in this age group also relates to the need to access safe environments in order to undertake PA without fear of falling or fearing of unsafe neighbourhoods (Buman et al., 2010; Nies & Motyka, 2006; Solberg et al., 2012). Such environments facilitate the ability to walk with confidence, that minimises health risk, allowing the build-up of confidence and competence in a safe way, ensuring ongoing independence.

Also important to the initiation phase was the sub-theme the importance/enjoyment of walking, attached to the theme importance of walking. This finding indicates that a love for walking was a trigger to become involved in group walking. There is often a longer-term association with walking for many older adults because of the enjoyment they had experienced undertaking it within previous phases of life. As a result, becoming physically active again may be easier if it is walking related, and known to be a pleasurable activity. Walking is identified as a popular form of PA within the older adult literature, which is likely to encourage older adults to initiate walking (Brown et al., 2009; Marselle, Irvine, &

Warber, 2013). In some of the older adult literature, experiencing pleasure from an activity is identified as being one of the most important factors for PA engagement as it is linked to happiness and enjoyment (Farrance et al., 2016).

From the social perspective, most of the sub-themes related to the theme of social aspects were linked to the initiation phase. These included: the importance of conversation; social support from both fellow walkers and walk leaders; companionship and friendship; sense of community and social connectedness. Such common social factors between studies indicates how important social factors are in relation to the initiation phase of older adult group walking. It suggests that at an advanced time in life, where loss of life partners, siblings and friends is more likely, the need to seek alternative friends and a desire for connectedness to others is understandable. It also suggests that loneliness may be more likely, and the group aspect of walking offers both companionship and support during a new activity. For those increasingly isolated, the importance of conversation at group activities becomes a greatly appreciated activity.

These findings are supported within the older adult literature. The desire to form and establish new friendships is evident in the literature as a reason to participate in PA (Farrance et al., 2016; Franco et al., 2015; Stephan et al., 2010). The opportunity to form additional friendships within gender groups is also identified as a draw towards specific types of PA activities (Dunlop & Beauchamp, 2013; Nies & Motyka, 2006). A fear of becoming socially isolated as an older adult is also identified as a reason to become physically active with people of a similar backgrounds and PA interests (Capalb et al., 2012; Dunlop & Beauchamp, 2013). In relation to social support, the van Stralen et al. review (2009), slightly differed to these findings. It identified that support from significant others and health practitioners, and social modelling from other participants were more linked to initiation. In contrast, social support from fellow participants and instructors were more linked to continuation.

Also linked to initiation is the social sub-theme entitled the persona of the walk leader, attached to the characteristics of the walk leader theme. The walk leader persona focuses on the friendliness and supportive nature of the walk leader. It indicates that the desire for friendliness from others extends to the group leader, who plays an important role in the

welcoming into the group and maintaining a friendly welcome during the important initiation phase. The specific support received from PA instructors is also evident in the older adult literature with a focus on feeling cared for and encouraged (Buman et al., 2010; Cress et al., 2005). For interventions with a finite amount of instructor support, the end of the intervention can result in PA lapse once the instructor support has been removed (Buman et al., 2010; Farrance et al., 2016; Scott et al., 2015). The findings from these studies reinforce the importance of the leader in encouraging ongoing engagement. These studies indicate the importance of the walk leader involvement and support from joining and ongoing encouragement (Buman et al., 2010; Farrance et al., 2016; Nies & Motyka, 2006; Scott et al., 2015).

There were two environmental themes linked to the initiation phase which were aspects of the programme and the physical environment. The sub-themes programme structure and regularity/variety of walking were recorded by seven and six studies respectively, indicating that the organised, structured and regular nature of group walking programmes are especially appreciated by walkers during the initiation phase. The ability to arrive at an activity that has been well organised and planned by others in charge of the programme seems to be an attractive factor, especially where flexibility for differing abilities is built in. It is reported within the literature that many participants look for quality in relation to the content of the PA, instruction, the levels of intensity offered and this can lead to drop out if the quality is not at the expected level (Farrance et al., 2016; Thogersen-Ntoumani et al., 2017). The flexibility of the programme, and its ability to accommodate a variety of skill levels is also highlighted as an important draw to keep attending (Dunlop & Beauchamp, 2013; Jancey et al., 2008; Tak, van Uffelen, Paw, van Mechelen, & Hopman-Rock, 2012).

Also important to the initiation phase were the sub-themes of safety and the opportunity to walk outdoors, connected to the theme the physical environment. This suggests that the context of walking is very important to older adults who walk with groups. The ability to walk in environments tested for safety, and also in attractive locations highlight that where walking takes place and also the aesthetics of walking environments are important external factors to the group walking context. Within the literature, the importance of personal safety within the environment and also the hazard free environment which minimises accidents and injuries is also identified as important for older adults gravitating towards specific types of PA (Cress et al., 2005; Sommers, Andres, & Price, 1995; Thogersen-

Ntoumani et al., 2017). Not feeling safe within the neighbourhood of the activity is identified as a barrier to instigating PA (Duncan et al., 1995b; Franco et al., 2015). For example within the UK, the time allocated for people to cross a pedestrian crossing safely is set to a walking speed of 2.5 miles per hour. However this amount of time is inadequate for many older adults whose average self selected speed is 2.0 miles per hour. This implies that many older adults potentially feel unsafe crossing roads and could avoid walking because of this (Bull & Hardman, 2017). Similarly maintaining interest at the start of an activity is recognised as important, so the opportunity to experience different routes and locations contributes to this (Thogersen-Ntoumani et al., 2017). The findings of this review identified that the need for safety was one of three themes that transcend all three contexts: individual, social and environment. The other two are friendships and enjoyment. This is discussed in more detail in section 2.4.3.2.

2.4.2. What individual, social and environmental factors are linked to the continuation phase of older adults walking with organised groups?

Research question two sought to identify the indivdual, social and environmental factors linked to the continuation phase of older adult group walking. There were six themes and 13 sub-themes present in five or more included studies within this review. Eight of those sub-themes were within the individual context, four in the social context and only 1 within the environmental context. This could indicate that the individual context is especially important within the continuation phase of walking. More specifically, all recorded themes within the individual context were present within the continuation phase. The physical health theme had three sub-themes; mental health had four sub-themes; and both personal characteristics and importance of walking had one sub-theme each. In relation to personal characteristics, motivation to keep going is a key individual behaviour that contributes to regular attendance within the continuation phase. Motivation and desire to keep going particularly comes into play when the potential excitement and newness of the activity has worn off. The initial excitement and momentum of joining an activity can wane, especially when facing the reality of walking on days of poor weather (if outdoors), and feeling slightly under the weather. The geographic and climatic environments varied throughout all included studies, and walking may not always be in clement weather or

conditions all year round. Similarly, this age group suffers more with illness and ill-health than any other population, indicating flare-ups of ill-health may be frequent inconveniences. The van Stralen et al. literature review (2009) identifying determinants of PA for older adults in relation to initiation and continuation acknowledges the importance of coping planning which enables participants to plan for dips in motivation, and allows participants to identify strategies to combat lapsing. The Farance et al. review (2016) also recognised the important characteristic of perseverence in relation to adherence.

The individual physical health sub-theme of a desire to lose weight/keep in shape also favoured the continuing phase. A desire to lose weight/keep in shape suggests that weight loss could be seen as a positive consequence of walking within the initiation phase. As such, maintaining a newer healthy shape and weight can become an ongoing aim and goal during the continuation phase. Within the literature, maintaining weight loss is recognised as important to maintenance (Buman et al., 2010; Costello, Kafchinski, Vrazel, & Sullivan, 2011) Within the van Stralen et al. review (2009), weight loss, or maintaining a healthy weight were also associated with the continuing phase of PA. Also within the physical health theme, the sub-themes of achieve and improve fitness and function, together with manage health conditions and protect health were present within the continuation phase. Both of these sub-themes may relate to improvements in fitness, function, and health conditions experienced as a result of ongoing walking during the initiation phase. Whereas participants may start group walking to improve fitness and health, they may choose to continue to maintain and extend initial improvements experienced at initiation. Within the older adult literature, ongoing concern for health, and thus a motivator for maintaining PA is reported as one of the key reasons for continuing (Costello et al., 2011; Farrance et al., 2016). Improved fitness, form and maintaining or managing health concerns are perceived by some PA participants as a major benefit of being physically active, and whatever the fitness level is, maintaining PA will at the least get no worse (Farrance et al., 2016; nguyen et al., 2005).

The mental health sub-themes were more linked to continuation than initiation. This could indicate that mental health outcomes may well be linked to factors established within the initiation phase, such as improved physical health, established friendships and support from others. The sub-themes of a sense of well-being/feel good factor, together with

experiencing more sleep/having more energy imply that walking undertaken within the initiation phase has resulted in a growing sense of well-being and feeling good. Similarly, more sleep and more energy could also be positive side effects of walking. It is not surprising then that a motivation for continuing is a desire to hang onto and build on these positive mental health experiences. It suggests that feeling better in oneself relates to continuing, because it may take time to start to feel better in oneself (Marselle et al., 2013). Similarly, feeling less tired/more sleep/energy are factors indicative that a period of time needs to evolve, prior to recognisable change is likely. Well-being and sleep have been reported previously to be particularly associated within the older adult maintenance literature (Farrance et al., 2016; Solberg et al., 2012).

Another important mental health sub-theme, self-efficacy, also features within the continuation phase. Although not as frequently reported as within the initiation phase, it is still reported by eight studies within the continuation phase. Self-efficacy linked to continuation is also likely to result from a build-up of confidence in walking during the initiation phase, resulting in the ability to walk further, faster and also in more challenging terrain. Self-efficacy within the literature has been related to the sense of empowerment from successful and rewarding undertaking of PA or walking (Donnachie, Wyke, Mutrie, & Hunt, 2017; Farrance et al., 2016). The van Stralen et al. (2009) review concluded that to maintain PA, self-efficacy in relation to personal achievements should be highlighted, and linked to the formation of coping plans, when personal motivation dips.

The sub-theme of the importance and pleasure of walking, attached to the theme of importance of walking for PA, is also reported in the continuation phase. Similar to the reporting of this sub-theme within the initiation phase, an enjoyment of walking, rediscovered as a consequence of joining a group, sustains ongoing walking. The sheer enjoyment of PA is identified within the older adult PA literature as important to the maintenance of activity (Cress et al., 2005; Dunlop & Beauchamp, 2013).

The social theme, social aspects had four sub-themes present within the continuing phase of group walking. A sense of belonging and shared identity was only reported within the continuation phase by at least five studies in relation to continuation. This sub-theme may suggest that achieving a sense of belonging is likely to be established over a period of time.

It indicates that in order to belong, walkers need to be initiated into a new activity, and spend time with others undertaking that reach a state of belonging to the group. Within the literature, others have highlighted that continuation of the activity allows the development of customs and traditions resulting in a sense of belonging (Buman et al., 2010; Cress et al., 2005; Farrance et al., 2016).

The sub-theme of social connectedness and desire for social contact was present within the continuation phase. This sub-theme also relates to its counterpart within the initiation phase. Once social contact and friendship has been established, the desire for ongoing connectedness established within the initiation phase sustains participation. This need for ongoing connection is recognised within the older adult literature. The draw of friendship and feeling socially connected are real drivers to initiate an activity and then become a likely factor in maintaining that practice (Stephan et al., 2010). Similarly, the need to maintain contact with those who are considered friends within groups, encourages ongoing participation and returning post illness or injury (Capalb et al., 2012).

In addition to this, social support from fellow walkers is also featured within continuation. Once walking is sustained, the development of supportive friendships from fellow walkers can blossom, and drive ongoing participation. Social support from fellow walkers does also feature within the literature, and this can relate to the need for role models to observe and imitate (van Stralen et al., 2009). The van Stralen et al study (2009) identified that support from fellow walkers in relation to mutual encouragement and support is more likely to relate to continuation. The sub-theme of fun, laughter and enjoyment was also reported within the continuation phase within this review. This implies that once walkers are experiencing a social environment that allows for light-hearted interactions with fellow walkers, this is perceived as good fun, and worth continuing for. Within the literature, the ability to experience and enjoy the lighter hearted interaction with fellow walkers or exercisers is a major inducement to continue and is often linked to refreshments breaks linked to activity (Dunlop & Beauchamp, 2013; Jancey et al., 2008).

The environmental context has only one theme and sub-theme linked to continuation. Experiencing the benefits of the group, which is attached to the theme of the importance of the group, is very similar to the social sub-theme achieving a sense of belonging. Experiencing benefits of the group indicates that it also takes a longer period of time before

the benefits of being a group are experienced and appreciated. It seems it takes time to appreciate not being alone during exercise and understanding how being in a group can mask and minimise the level of PA exertion and distance being achieved with regular attendance. Within the literature, the benefits of the group, and how those benefits expand with increasing participation, is reported as a key factor to older adults within a PA setting (Scott et al., 2015). Undertaking PA in a group setting has been described as cathartic and like group therapy (Scott et al., 2015). It has been described as an important part of involving older adults in PA (Buman et al., 2010). The group aspect also provides a distraction from carrying out the PA (Dunlop & Beauchamp, 2013). The inclusive element of group PA is also recognised as appealing to older adults (Nour et al., 2007).

2.4.3. Are there any similarities and differences within the individual, social and environmental factors linked with the initiation and continuation phases of older adult group walking?

Question three sought to identify if there were similarities or differences in the factors linked with the initiation and continuation phases of walking. These are detailed below.

2.4.3.1. Similarities within the individual, social and environmental factors linked with the initiation and continuation phases of older adult group walking

In terms of similarities between phases, there were some themes and sub-themes present within both phases within the individual and social contexts, but not within the environmental context. Within the initiation phase, there were four sub-themes, there were three within the social context, and none within the environmental context. This indicates that the individual context especially, and also the social context, have factors mutually important to both phases. From the individual context, physical and mental health, together with importance of walking had some sub-themes in both phases: achieving/improving fitness; managing /protecting health conditions; self-efficacy; and enjoyment/pleasure of walking all cross over between phases. Managing and protecting health and feeling comfortable, confident and increasingly competent in walking are all important factors which compel older adults to undertake and maintain walking. This commitment to walk is also supported by an enjoyment of walking, discovered often at a

younger age, and rediscovered upon commencement of group walking. The enjoyment is reawakened, sustaining attendance. The older adult literature that focuses on motivation, adherence, and reasons for participation in PA and walking recognise the importance of health concerns, disease and illness prevention, health status and fitness improvement in initiating and sustaining PA (Buman et al., 2010; Costello et al., 2011; Cress et al., 2005; van Stralen et al., 2009). Similarly, the importance of enjoyment in undertaking PA for instigating and sustaining activity is also recorded (Farrance et al., 2016; van Stralen et al., 2009).

In relation to the social context shared themes and sub-themes between phases, social aspects had three sub-themes: social support for fellow walkers, desire for social contact/connectedness and fun/laughter/enjoyment. The desire for social contact and connectedness seems important to both phases, especially for an age group where social isolation is increasingly possible. The draw of an enhanced social network morphs into a deeper sense of connectedness, especially as friendships blossom and expand. Linked to this is the seeking of role modelling, encouragement and support from fellow walkers initially, which then becomes a more mutual form of support. Fun/laughter and enjoyment is likely to enhance the activity in both phases. The older adult PA literature identifies the importance of social aspects within PA participation. Social interaction; social networking and seeking social connectedness are all highlighted (Buman et al., 2010; Costello et al., 2011; Cress et al., 2005; Farrance et al., 2016). In relation to social support from fellow attendees, the van Stralen et al (2009) review identified social support from fellow exercisers as more prevalent within continuation. However, social modelling, which is the desire to watch and learn from others, is linked to initiation.

2.4.3.2. Similar themes inter-connecting the individual, social and environmental contexts

Another important similarity is the identification of similar themes inter-connecting the individual, social and environmental contexts. There are three themes in particular: namely sources of enjoyment, friendliness, and safety. In relation to enjoyment: the sub-theme enjoyment of walking within the individual context is present in both initiation and continuation. The source of the enjoyment relates to the walking itself. The enjoyment of walking is also present within the social context, where the source of enjoyment relates to

fun, laughter and enjoyment of being with others. This sub-theme is also present in both phases. Added to this is the enjoyment of walking environments and terrain, where the enjoyment relates to scenery and varied walks. These sub-themes are present within initiation only. An enjoyment for walking, and a recognition that walking is important to the individual, is a factor which brings a new walker to the group, and can act as an attraction to the group activity (Farrance et al., 2016). Once attending the group, the opportunity to experience a sense of fun, laughter and enjoyment within the social context reinforces the enjoyment of the overall walking experience (Jancey et al., 2008). Within the environmental context, a programme that is designed to maximise enjoyment opportunities, such as including a variety of walks, locations, new places and beautiful scenery (where possible) reinforces the theme of enjoyment (Marselle et al., 2013). Locations which are safe both in terms of terrain and safety in numbers also maximises participant opportunities to enjoy the walking experience (Thogersen-Ntoumani et al., 2017).

In relation to friendliness: from the individual context, new walkers initiate walking in groups in search of new and meaningful friends and friendships, perhaps to replace work colleagues post retirement (Capalb et al., 2012; Dunlop & Beauchamp, 2013). Once at the walking group, there is an opportunity for a range of friendship experiences within the social context. These range from general companionship, to more in-depth friendship and a sense of belonging (Capalb et al., 2012; Costello et al., 2011; Farrance et al., 2016). The friendliness concept is further cemented within the environmental context where the friendly ethos of the programme is designed to accommodate all levels thus minimising exclusion (Cress et al., 2005; Dunlop & Beauchamp, 2013; Farrance et al., 2016).

In relation to safety: from the individual perspective, older adults initiate walking in groups to help to improve health and assist in managing health conditions, in a safe and supported environment. Fear and anxiety relating to falling and or experiencing personal safety while undertaking PA can be related to the need to protect health. Within the social context, this issue of maintaining and protecting health safely is reflected in walk leader social support and the persona of the walk leader. This review highlighted the importance of gaining confidence with good instruction and an appreciation for expertise and the instructor's ability to tailor programmes to suit a variety of skills. Encouragement and interest in participant development expressed by the instructor was also appreciated, together with a

focus on safety. Within the environmental context, some older adults cited safe walking areas, personal safety by walking with others, and terrain that had been approved as appropriate for walking, as reasons for walking with their group. Personal safety and the need to take care are recognised in the older adult literature as important factors to be taken into consideration in relation to PA (Bull & Hardman, 2017; Cress et al., 2005; Solberg et al., 2012). Similarly, from a social context, the expert walk leader is cited as a real bonus of group exercise as this minimises potential injury (Farrance et al., 2016; Jancey et al., 2008). From an environmental perspective, the safety of terrain and safety in numbers are all cited within the older adult literature as important to participation (Franco et al., 2015; Thogersen-Ntoumani et al., 2017).

These overlapping shared themes identified within this review reflect the multiple levels of influence defined by the Ecological framework (Sallis et al., 2008). In keeping with the principles of the Ecological framework, this review identifies that factors influencing behaviour are widely distributed, not focused on one source or another (Sallis et al., 2008). The findings in this review defined by individual, social and environmental factors help to display that multiple forces shape people's behaviour. The van Stralen et al literature review (2009) categorised all of its identified determinants within an individual, social and environmental context, and concluded that a person's behaviour can be strongly influenced by supporting or thwarting social environment. A key tenet of the motivational theory known as self-determination theory (SDT) identifies the importance of adaptive environments and supportive social contexts for nurturing and sustaining motivation, especially in relation to initiation and continuation of PA behaviour (Ryan, Williams, Patrick, & Deci, 2009; Wilson, Mack, & Grattan, 2008). How individual behaviour in the form of motivation is impacted by social and environmental factors is explored in more detail within the next chapter.

2.4.3.3. Differences within the individual, social and environmental factors linked with the initiation and continuation of phases of older adult group walking

In relation to differences between the initiation and continuation phases of older adult group walking, there were four sub-themes within the individual context present in both initiation or continuation. There were also six sub-themes within the social context and all

five sub-themes within the environmental context were present in only one phase. This high level of differences within each phase highlights the phase specific nature of each context. Although the individual and social contexts had some sub-themes that overlapped between phases, they also had a large number of sub-themes present in either initiation or continuation. As such, each phase has a phase specific nature with a mix of some shared sub-themes and some exclusive sub-themes. The findings from this review are similar to those identified in the van Stralen et a.l literature review (2009) which explored the determinants of initiation and maintenance of PA among older adults. Van stralen et al. (2009) concluded that determinants are in the main phase specific, but there are also many similarities. In terms of similarities, the van Stralen et al. review (2009) identified similarities in health status, self-efficacy, enjoyment of PA, and self-efficacy. There were also similarities for issues relating to having a good social network and safety issues relating to neighbourhood and personal safety.

Safety issues in this review were only present in initiation. In terms of differences, van Stralen et al. (2009) found evidence of outcome expectations (initiation) versus coping expectations (continuation). From a social support point of view, support from health providers and significant others were high for initiation and support from leaders and fellow participants high for continuation. Although these findings differed from this review, it does highlight that initiation and continuation are phase specific. In keeping with this review, van Stralen et al. (2009) identified an association between pleasant scenery and initiation. The phase specific nature of initiation and continuation makes it particularly important to explore phase specific factors when reviewing reasons why older adults start and stay involved in PA. Some older adult research focuses on motivations or barriers, perspectives on participation or best practice without necessarily addressing the importance of phases (Buman et al., 2010; Costello et al., 2011; Cress et al., 2005).

2.5. Summary of main findings

In exploring the reasons why older adults start and continue walking with organised groups, it is evident that multiple factors influence both the initiation and continuation of walking for groups, and that these factors are often inter-linked. There is also evidence that the reasons influencing the initiation and continuation of walking relate to three key contexts

within the ecological model: individual, social and environmental. Both individual and social factors appear to have more influence than environmental at both stages of group walking, although no one factor is more inherently important than another. However, there were more individual and social factors at play. Further, individual and social factors are often enhanced over time, such as a development of well-being and the strengthening of friendships. In relation to the individual context, older adults appear to be attracted to walking for physical and mental health reasons. Developing self-efficacy seems to be especially important because it is referenced so many times. The social component of group walking is important in providing opportunities for social interaction, and building a sense of belongingness and identity. The environment appeared to be more important during the initiation phase, although group aspects were important in continuation. Whilst the review has identified nuances between the two phases, there is clearly a need to look at the breadth of individual, social and environmental factors when looking to recruit and retain older adult walkers in walking groups.

2.6. Strengths of the study

This systematic review exploring why older adults start and continue to walk with organised groups is the first to my knowledge that focuses specifically on older adults in a group walking context. The review is also the first to synthesise existing evidence from qualitative studies to provide rich insight into the reasons why older adults start and continue to be involved in walking with groups. In addition, this review had a specific focus on the initiation and continuation phases of group walking, in an attempt to identify whether there are phase specific factors influencing walking behaviour. This review also incorporated the principles of the ecological framework, separating out the individual, social and environmental factors linked to older adult group walking. It also sought to identify common themes linking the individual, social and environmental contexts. The study was also undertaken with rigour, following systematic review guidelines for practice, including a pre-published protocol, approved searching criteria and analysis protocols.

2.7. Limitations of the study

In order to report the multiple findings of this study, findings were restricted to those present in at least five included studies within the review. The overall findings may have

had a slightly different interpretation, had full results been reported. In addition, factors were only reported as continuous if they were clearly identified within included studies as present at least six months post commencement of walking. Factors described by authors as relating to maintenance, but were experienced by participants within six months of starting, were analysed within this review as pertaining to initiation. There is recognised ambiguity surrounding the definition of PA maintenance (Fjeldsoe et al., 2011; Kassavou et al., 2014). Therefore a six month cut off is only one interpretation. Similarly, data were not double screened in total. Despite this, a robust critical friend process was adopted.

2.8. Implications for practice

The findings from this review will be shared with Paths for All (PFA), the registered charity tasked in Scotland by the Scottish Government to champion and promote walking as an activity for everyone, every day, everywhere. The multiple and inter-connected levels of influence can potentially help inform the development of existing practice and potentially new interventions. For example, the importance of recognising the perceived physical and mental health reasons for joining groups can be enhanced, perhaps with opportunities for participants to monitor their walking progress, with objective measurement devices. Similarly, sharing how important self-efficacy appears to be to participants during both phases of walking could enable walk leaders to train on how to promote and assist with enhancing confidence and self-mastery of walking in groups. From a social perspective, the importance of feeling encouraged and supported to join groups could result in more veteran participants adopting a formal or informal buddying role to help ease the settling in process for new starts. Promotion of refreshment breaks should also be highlighted, with the need for resources to be continually sought from funding bodies.

In relation to continuation, the extension of social contact could be recommended in the form of additional outings, such as to the cinema on OAP discount days. The sense of belonging could be reinforced with customised T shirts and other promotional walking gear. Added to this, with the love of walking important to both phases, the publication of photos of walking locations in promotional material would also be useful. A previous PfA study looking at the factors influencing older adult group walking behaviour previously captured some of these suggestions detailed above, and revisiting them with PfA would be also

recommended (Niven, Laing, & Fawkner, 2012). Preliminary findings from the systematic review indicated that individual and social factors were particularly important in influencing behaviour. Therefore, it was planned to focus each of the subsequent two studies on these constructs, respectively. The individual factor of motivation was evident in the review findings, both as a distinct factor and also evident in the factors highlighting the reasons why participants walk (e.g., for physical health reasons). Motivation is also a modifiable factor, and as such may be targeted in interventions. For these reasons, the focus on Study 2 was to enhance understanding on how motivation influenced walking behaviour.

3. Walking Experiences: Researching Older Adult Motivations – the WE: ROAM study

3.1. Background

Study two was devised to explore in detail one of the factors identified from study one as important to the initiation and continuation of older adults walking in walking groups. The psychological factor of motivation was subsequently selected for study two because it was identified as a key individual behaviour that can contribute towards regular attendance and continuation of activity. The introduction to this chapter is organised into five sections. Firstly, the beginning of the background section explains further the reasons why motivation was chosen, starting with a definition of motivation. Secondly, the section then provides an overview of behaviour change theories that explore aspects of motivation, culminating with the humanist/organismic framework. Self Determination Theory (SDT), is a humanist/organismic framework, and was selected as the framework for study two.

A dedicated third section within the background focuses on a full explanation of SDT principles. The section also identifies why SDT was considered as fitting to explore and analyse the initiation and continuation of older adult motivations for walking in walking groups. This section fully explains SDT theory, including specifics of the relevant SDT mini theories, and how initiation and continuation of behaviour is facilitated via SDT tenets. A summary is then provided of an SDT behaviour change pathway, with supporting pictorial representation. This behaviour change pathway draws together key principles of SDT tenets previously explained. This pathway demonstrates how people acquire motivation for initiating new behaviours and maintaining them over time.

Fourthly, the background section provides an overview of the SDT walking literature. This summary has a focus on the four inter-connecting aspects of SDT forming the behaviour change pathway. Finally, the fifth section of the background concludes with an outline of study two, named Walking Experiences: Researching Older Adult Motivations (WE:ROAM). The finale to this background section explains in detail the purpose, aims and research questions developed for the WE:ROAM study. It demonstrates how specific SDT principles

informed the study in order to explore and measure initiation and continuation of older adult group walking, with a view to addressing gaps in the existing literature.

3.1.1. What is motivation?

Motivation is a complex psychological process that influences behaviour (Deci & Ryan, 2000; Ryan & Deci, 2000). More specifically, motivation helps to determine an individual's intention and momentum to act, and how this impacts the initiation, direction, persistence and strength of that behaviour (Ryan & Deci, 2000). Motivation is by its nature a complex mechanism and can be difficult to understand because of the multiple and differing ways motivation manifests in individuals (Ryan & Deci, 2000). Motivation incorporates the intention behind the behaviour, the specific energy force and drive to initiate and maintain the momentum of the behaviour, and also the desired outcome or goal of the behaviour (Deci & Ryan, 2000; Sheldon, 2003).

3.1.2. Why focus on motivation?

Motivation was chosen as the focus of study two WE:ROAM for two reasons. These are: because of its recognised importance to the initiation and continuation of behaviour change, as highlighted within the systematic review; and it has modifiable characteristics, therefore more open to influence. Both reasons are explained in more detail below.

3.1.2.1 Motivation – a factor recognised as important to the initiation and continuation of PA and walking behaviour

Firstly, motivation was identified as important to the initiation and continuation of older adult group walking in study one. This finding was reinforced by other older adult PA focused systematic reviews which also identified motivation as an important initiation and continuation factor (Farrance et al., 2016; Franco et al., 2015; van Stralen et al., 2009). In the van Stralen et al. review, motivational issues were identified as especially important to both the initiation and continuation phases, such as being motivated to avoid risk to health, or to maintain physical function (van Stralen et al., 2009). The Farrance et al. review (2016) identified similar motivational awareness factors to van Stralen et al. (2009), such as perceived health benefits. Both reviews reported motivation was a key factor, resulting from the development of self-efficacy in the form of perceived behavioural control.

More broadly beyond older adults and PA, research relating to motivation reinforces the importance of motivation in the initiation and continuation of behaviour. Motivation has been identified as a key psychological mechanism directly linked to the initiation and continuation of behaviour change (Deci & Ryan, 2000; Ryan & Deci, 2007). Some researchers have identified that a clear understanding of the motivational processes that underpin decisions to engage in specific behaviours, can provide valuable insight into the adoption and maintenance of preferred behaviours (Silva et al., 2010; Wilson et al., 2008). Other researchers have suggested that motivation is a unique predictor of health behaviour change (Andre & Dishman, 2012). As such, motivation is essential, even critical to understanding the processes impacting PA involvement and lifestyle changes (Andre & Dishman, 2012; Ryan et al., 2009).

Specifically in relation to the initiation of behaviour change, motivation plays an important role because the desire to embrace change can vary greatly within individuals (Ryan, Patrick, Deci, & Williams, 2008). The adoption of health inducing behaviours is impacted by various lifestyle choices that could result from external pressures from health care professionals, or a positive use of rewards and incentives (Ryan et al., 2008). It is important to recognise the realm of motivational components that trigger the initiation of behaviour because they may not automatically transfer into maintenance (Ryan et al., 2008). In a bid to better understand the complexities of motivation as it relates to initiation in older adults, the van Stralen et al. literature review (2009) identified three key motivational phases. Pre motivational factors were categorised as awareness raising issues such as knowledge and risk perceptions. Motivational factors were categorised as those that influence thinking and deciding to become active. Finally, the initiation phase also contained post motivational factors that resulted in the translation of intentions into actions (van Stralen et al., 2009).

Specifically in relation to continuation, motivation was identified as a major factor in a recent systematic review that identified successful theoretical explanations for sustained behaviour change (Kwasnicka, Dombrowski, White, & Sniehotta, 2016). The review identified five key inter-connecting themes and motivation was important to most of them. These included maintenance motives, which related to enjoyment, avoiding negative health outcomes and self-determination. Another theme entitled self-regulation highlighted the importance of the need for self-regulation, and having self-regulation skills. A further

theme called resources related to the importance of psychological resources available to the self.

3.1.2.2. Motivation – a modifiable factor more open to the influence of behaviour change

Secondly, psychological factors related to behaviour change, such as motivation, have been identified in the PA literature as modifiable and as such more open to influence resulting in behaviour change (Biddle, Mutrie, & Gorely, 2015; Markland & Ingledew, 2007). For example, it is within the power of an individual to change their motivation to achieve a health outcome. In contrast, a person has less influence to change the outcome of a biological hereditary illness (Ryan et al., 2008; Sheldon, 2003). As such, deciding to become more physically active is a behaviour controllable by the individual (Ryan et al., 2008). Due to the recognition that motivational factors are open to behaviour change, many public health and fitness researchers have focused on psychological determinants of behaviour change within interventions (Hagger & Chatzisarantis, 2008).

3.1.3. The importance of exploring motivation within behaviour change frameworks: an over-view of relevant theories

A number of theoretical frameworks of behaviour change have been used within PA to understand the motivational processes influencing behaviour change (Rhodes, McEwan, & Rebar, 2018). Such theories provide helpful frameworks for research, including physical activity studies, designed to test relevant hypotheses. In relation to PA, there are many popular options, so it can be difficult for researchers to decide which framework to adopt for their study. A recent synthesis of approaches provides an overview of the most popular theoretical frameworks for understanding PA behaviour change (Rhodes et al., 2018). The social cognitive, dual process and humanistic/organismic frameworks are summarised below.

3.1.3.1 Motivation within the Social Ecological framework

The over-arching framework for this thesis is the social-ecological framework, and motivation is represented within the framework at all levels. For example, motivation is an individual construct, however motivation is also heavily influenced by social, and environmental settings (Deci & Ryan, 2000; Ryan & Deci, 2000). As demonstrated by the

social ecological model (Sallis et al., 2008), motivation is an individual construct and can be interpreted within this individual context, as it sits within the inner circle of the model, such as a desire to become fitter. The starting point for a type of motivation to become physically active may form from an individual perspective represented by the inner circle of the model. However, the individual action may be enriched or thwarted by the level of perceived social support, or lack of (Ryan et al., 2008; Wilson et al., 2008). Similarly, the location or environment of the activity, especially if it changes and became more difficult to access, could also have an impact on the person's motivation to continue attending (Ryan et al., 2009). This is a specific example of how individual behaviour change relating to motivation is potentially impacted by multiple and inter-connected levels of influence, especially when viewed within the wider social and environmental outer rings of the social ecological model (Bauman et al., 2012).

3.1.3.2. The social cognitive framework

The social cognitive framework has been a popular behaviour change choice and is based on a cognitive paradigm that involves both social learning and mental representations of learning. The framework is based on the idea that valued outcomes and expectancies are essential to subsequent action (Rhodes et al., 2018). As such, people are likely to be physically active if they believe PA is important and they feel they can achieve it. The theory of planned behaviour (TPB), the social cognitive approach and the trans-theoretical model (TTM) are all popular theories that fit into the social cognitive approaches. However, some critics believe that social cognitive constructs are not enough in their own right to help explain PA behaviour, and they rely too much on the individual as an agent of change.

3.1.3.3. The dual process framework

The dual process framework works on the premise that individual behavioural determinants are influenced by two types of processes which are called reflective and non-conscious/ automatic. Rhodes et al. (2018) explained that reflective processes are characterised by deliberate effort and intentional acts. Reflective processes include conventional social cognitive approach variables. In contrast, the non-conscious or automatic processes are much less understood and therefore less tested. Non conscious processes relate to habits, automatic self-schemas and automatic motivation. They have been linked to hedonic motivational processes which relate to feelings experienced during PA, and how these feelings may influence future PA participation. The theories including

non-conscious regulation are in the main underpinned by associations with memory. Memory can be conceived as a network of associated concepts which are activated on cues. These mental networks of associations manifest into behavioural influences that either trigger urges to engage or avoid behaviour like PA. Dual process theories operate under the premise that people are likely to have a default setting in line with non-conscious processes. As such, people need sufficient motivation or self control to enforce reflective processes. Most studies adopting dual process theories test non conscious and reflective processes as to how they predict behaviour. Although historically popular, dual process theories are more recently considered over simplified. Automatic responses are more likely to be placed at a point along a continuum, with reflective processes at one end and non-conscious processes at the other.

3.1.3.4. The humanistic/organismic framework – selected for WE:ROAM

The humanistic/organismic framework is another popular framework that has successfully been applied to PA. One of the most popular theories within this framework is SDT. Rhodes et al. (2018) reported that SDT has endured because its mini theories make it is easier to study and teach the multiple components of motivation. However, Rhodes et al. (2018) do highlight that the theory has been criticised by simplifying human needs into three specific needs. Similarly, Rhodes et al. (2018) questioned whether the four reported types of all extrinsic regulation within SDT encompass all forms of behaviour that is externally regulated. SDT was selected as the guiding framework for the WE:ROAM study because it accommodates the complexities of motivation and can specifically address health behaviour initiation and maintenance (Ryan et al., 2008). As such, the following section explains SDT in more detail, and the specific tenets of the theory selected as a framework for WE:ROAM.

3.1.4. What is SDT?

Self Determination Theory (SDT) is a psychological theory of motivation. Although it recognises physiological drives, the core theory relates to psychological needs (Deci & Ryan, 2000). Motivation is often treated as a singular construct, but people are motivated by multiple and different types of factors, with a wide range of experiences and outcomes. The tenets of SDT address these complexities through a series of micro theories which join together to become a macro theory of motivation (Ryan & Deci, 2000).

A core principle of SDT is that people are by nature active, growth orientated beings. People have an inherent tendency to seek out new challenges and experiences that will provide opportunities to explore and learn (Ryan and Deci 2000). In pursuit of that knowledge and experience, individuals will adopt (where possible) a high degree of mastery, spontaneous interest and exploration. This pursuit is of itself essential to both cognitive and social development. If fulfilled, it will provide the utmost source of enjoyment and vitality throughout life (Ryan & Deci, 2000).

According to SDT, the optimum form of motivation is known as intrinsic motivation (Deci & Ryan, 2000; Ryan & Deci, 2000). Activity undertaken as a result of intrinsic motivation will be inherently satisfying and enjoyable and linked to need fulfilment directly (Ryan et al., 2009). Intrinsic motivation is described as the natural human drive towards exploration, spontaneous interest, mastery and fulfilment (Ryan & Deci, 2000).

3.1.5. Why SDT?

SDT was chosen as the supporting theoretical framework for three reasons. Firstly, SDT has been identified as a successful theory for understanding exercise behaviour as reported by a systematic review that analysed 66 studies, all using SDT methodology, to explore exercise (Teixeira, Carraça, Markland, Silva, & Ryan, 2012). SDT has also become an increasingly popular theory because it can unpick the complexities of motivated behaviour relating to PA (Standage & Ryan, 2012; Teixeira et al., 2012). The literature provides good evidence for the value of SDT in understanding exercise and PA behaviour (Teixeira et al., 2012). In fact, it has been reported that the Teixeira et al. systematic review (2012) that examined the relationship between SDT constructs and exercise behaviour has been cited nearly a 1000 times (Rhodes et al., 2018).

Secondly, SDT has been described as particularly focused on the processes through which an individual acquires motivation for both initiating and continuing health behaviours (Ryan et al., 2008). SDT accounts for both the quality of motivation regulating behaviour and the processes that facilitate motivational development (Wilson et al., 2008). The SDT approach is helpful to assist the understanding of both initiation and persistence of PA behaviour because it addresses the nature and function of motivation. In particular, the results of the Teixeira et al. systematic review (2012) supported a positive relationship between more

autonomous forms of motivation and exercise. It also reported that intrinsic motivation was more predictive of long term adherence, and identified regulation predicting initial or short term adoption. Another systematic review by Kwasnicka et al. (2016) reported on successful health behaviour change characteristics, many of which relate to SDT (previously discussed within the motivation section).

Thirdly, a key tenet of SDT is the importance of adaptive environments and supportive social contexts for nurturing and sustaining motivation, especially in relation to initiation and continuation (Wilson et al., 2008). Within SDT, social and environmental factors are considered critical to motivational processes and subsequent outcomes (Duda et al., 2014). For example, a change in the social environmental context can have immediate effects on the quality of participation as experienced by participants (Ryan et al., 2009). A change in activity leader who has a very different leadership style can have a positive or negative impact on participants. Similarly, a change in the environmental location could also be a positive or negative factor (Ryan et al., 2009). This aspect of SDT is appealing for understanding PA contexts where the environment could be influenced to enhance it.

3.1.6. The mini-theories of SDT

Figure 9 below (Ryan, 2018; Standage & Ryan, 2012) outlines the six mini-theories of the macro theory of SDT. This section below focuses on key tenets of two mini theories incorporated into the WE:ROAM study Organismic Integration Theory (OIT) and Basic Psychological Need Satisfaction (BPNS).

3.1.6.1. Overview of the SDT mini theories OIT informing WE:ROAM

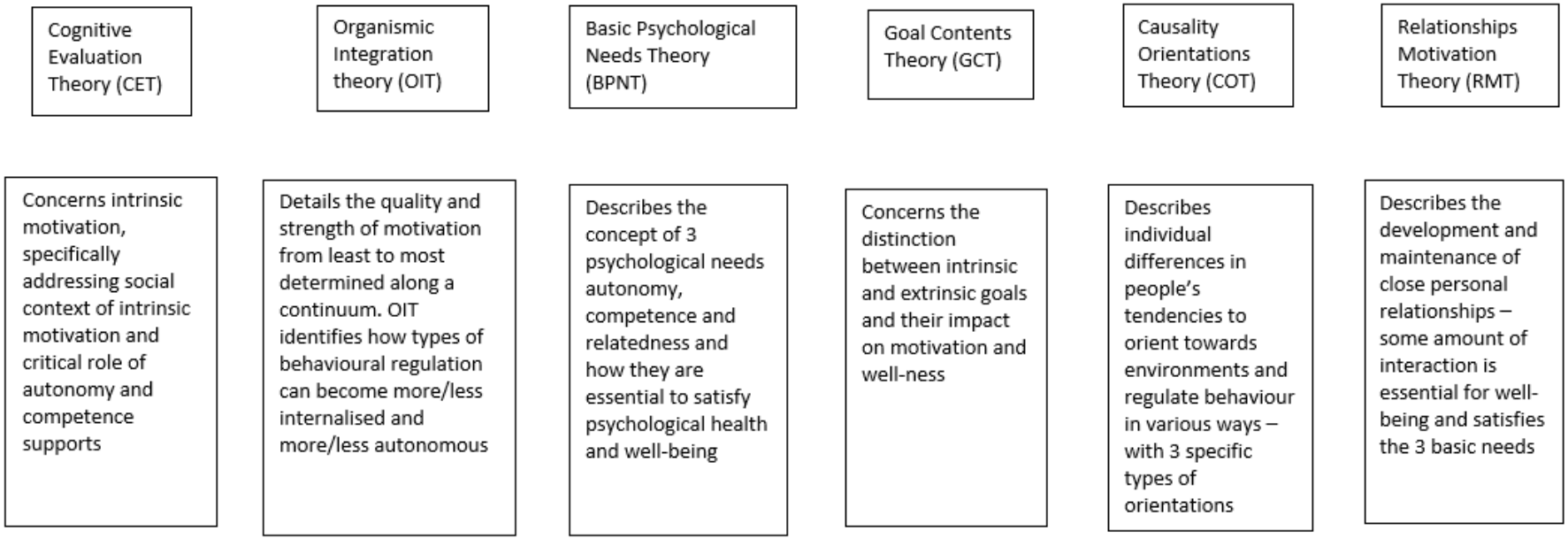
OIT classifies the quality and strength of motivation along a continuum of perceived locus of causality which ranges from highly controlling to highly autonomous forms of motivation. Figure 10 below (Deci & Ryan, 2000; Standage & Ryan, 2012) illustrates the key aspects of OIT and shows how the quality of motivations changes along the continuum. Figure 10 demonstrates the most autonomous end of the continuum is intrinsic motivation to the right, and relates to an activity that is undertaken for the pleasure and satisfaction of the activity in its own right. Other motivations are more extrinsically driven. The term extrinsic motivation relates to undertaking an activity to achieve a separate outcome from the

activity itself such as receiving a reward, avoiding punishment or guilt or to gain recognition or approval (Ryan et al., 2009).

At the furthest left point of the continuum lies amotivation (no intention to act). Next, are four states of extrinsic motivation that become increasingly self-determined, finally reaching intrinsic motivation on the right. Each state of motivation is under-pinned by a behavioural regulatory style representing the degree of internalisation and locus of causality. As demonstrated by figure 2, for extrinsic motivation, external regulation is a form of motivation and is characterised by the need to satisfy an external demand such as to please someone else. Introjected regulation is a type of motivation expressed as a reason to avoid feeling guilty or a desire to feel good about yourself. Identified regulation and integrated regulation are both autonomous forms of extrinsic motivation. Identified relates to valuing the activity and seeing it as important. Integrated is characterised by a sense of personal value and integrated into the self (Deci & Ryan, 2000).

OIT recognises that some behavioural regulations are interpreted by individuals as imposed and as such are alien to self (on the left of the extrinsic continuum). These extrinsic motivations have an external locus of causality. In contrast, other extrinsically motivated activity is more self-endorsed (on the right of the extrinsic continuum). The locus of causality for these forms of extrinsic motivation is described as somewhat external. Motivations become more internalised as they progress towards the right of the continuum, achieving an internal locus of causality. OIT also depicts the states of motivation along the continuum can be classified into either autonomous or controlled. More specifically, the forms of extrinsic motivation on the left of the continuum (external and introjected) are controlled. Identified and integrated forms of extrinsic motivation are considered to be more self-determined and therefore autonomous. Intrinsic motivation is also described as being highly autonomous and represents the ultimate example of self-determined motivation. Despite the individual drive and appetite for intrinsic motivational tendencies, unfortunately, various non supportive conditions can readily disrupt the pursuit and attainment of intrinsically motivated behaviour. This can also work in reverse, with certain conditions facilitating the internalisation of extrinsic forms of motivation, becoming more self-determined and ultimately intrinsic (Brunet & Sabiston, 2011; Ryan et al., 2009; Ryan & Deci, 2000).

Figure 9: Depiction of the six mini-theories of SDT



Adapted from (Ryan, 2018; Standage & Ryan, 2012)

Figure 10: Self-determination continuum showing types of motivation with their regulatory styles, perceived locus of causality, and examples of how this relates to walking behaviour

Type of motivation	**Amotivation**	**Extrinsic Motivation**				**Intrinsic motivation**
Type of regulation	Non-regulation	External	Introjection	Identified	Integration	Intrinsic
Defining features	Lack of intention to act and personal causation	Action to obtain external contingency	Action to avoid internal feelings of guilt or enhance self-worth	Action because consciously value the activity	Action because activity is related to/integrated with individual's goals and values	Action is based on inherent satisfaction from activity
Perceived locus of causality	Impersonal	External	Somewhat external	Somewhat internal	Internal	Internal
Position on the autonomy continuum	N/A	**Controlled Motivation** (behaviour governed by external or internal pressures)		**Autonomous Motivation** (volitional behaviour because value activity)		
Example	I am not interested in walking for health	I walk to keep my partner happy	I walk because I feel good about myself if I do it	I walk because I value that it is good for my health	I walk because being active is important to who I am	I walk because I enjoy walking

Adapted from (Deci & Ryan, 2000) and (Standage & Ryan, 2012)

3.1.6.1.1. The initiation of behaviour change - from the OIT mini theory

OIT was selected to help inform WE:ROAM because some of the behavioural regulations within the theory, such as identified regulation, have been highlighted as particularly important to adoption of behaviour (Rodgers, Hall, Duncan, Pearson, & Milne, 2010; Stephan et al., 2010; Teixeira et al., 2012). The Teixeira et al. systematic review of exercise, PA and SDT, (2012) reported that identified regulation could encourage the take up of a particular PA in order to maintain or improve health as a valued outcome. Other less autonomous forms of extrinsic motivation, such as introjected, can be important to the take up of activity, especially if the activity is not considered initially enjoyable (Markland & Ingledew, 2007). Introjected regulation is categorised as motivation that is external to the self, and triggered by issues such as desire to lose weight, guilt or pressure from others to attend. Although this type of regulation may induce adoption, longer term continuation can have a negative impact on self-worth and well-being (Wasserkampf & Kleinert, 2016; Wilson et al., 2008).

3.1.6.1.2. The continuation of behaviour change – from the OIT mini theory

In relation to the continuation of PA, there is also evidence that supports the link between autonomous forms of motivation such as identified and integrated regulation and persistence (Dacey, Baltzell, & Zaichkowsky, 2008; Kirkland et al., 2011; Teixeira et al., 2012). In particular, the combination of identified and intrinsic regulation together provides a strong predictor of persistence (Markland & Ingledew, 2007). This is explained by a recognition that even when PA is inherently enjoyed and experienced as intrinsic, there are times when continuing is hard work (Markland & Ingledew, 2007; Ryan & Deci, 2007). This could be hard work due to issues such as inclement weather, the need for exertion and competing priorities. When PA gets hard, or is initially unappealing, it is the less autonomous motivation with perhaps a health focus, such as identified regulation, that triggers the initial engagement, but also can sustain when participating becomes difficult (Ryan & Deci, 2007).

Integrated regulation has been recognised as a predictor of exercise behaviour, and also linked to the frequency of exercise behaviour and self-worth (Duncan, Hall, Wilson, & Jenny, 2010; Wilson, Rodgers, Loitz, & Scime, 2006b). As the most autonomous and

internalised form of extrinsic motivation, some researchers believe integrated regulation is an important motivational influence in promoting health behaviours (Duncan et al., 2010; Wilson et al., 2006b). In the study by Wilson et al. study (2008), perceived autonomy was an important predictor of integrated regulation, highlighting the link between need satisfaction and the internalisation of regulation, leading to ongoing exercise behaviour. Despite positive findings linking integrated regulation to exercise behaviour, both Duncan and Wilson conclude integrated regulation is under-utilised in identifying motivational influences in PA (Duncan et al., 2010; Wilson et al., 2006b).

Intrinsic motivation is also strongly linked to the continuation of behaviour and has been described as the cornerstone of SDT, especially in relation to the persistence of behaviour (Chatzisarantis & Hagger, 2007; Ryan & Deci, 2007). When intrinsic motivation is achieved, participation is more likely to be experienced with a sense of volition and freedom from pressure, and therefore more likely to lead to long term commitment (Ryan et al., 2009)

3.1.6.1.3. The internalisation process of behavioural regulation and persistence

The development and growing strength of autonomous forms of motivation, which depicts the internalisation process, can act as the bridge between the initiation of behaviour and continuation (Teixeira et al., 2012). For example, reasons to start a form of PA may be triggered by more extrinsic factors, such as a sense of guilt for not being active, but a sense of growing enjoyment and fulfilment can lead to the behavioural regulations becoming more internalised, more autonomous and ultimately self-determined (Ryan & Deci, 2007; Teixeira et al., 2012). As such, it is possible for motivation to be made more intrinsic (Teixeira et al., 2012). In such cases, the behaviour is more likely to lead to persistence (Wilson et al., 2008).

The internalisation process is very closely linked to the satisfaction of needs and the provision of optimal social environmental conditions to nurture need satisfaction and subsequent internalisation of regulation. Both need satisfaction and the optimal social, environmental settings are discussed in more detail in the next section. The internalisation of regulation occurs over specific periods of time. How long it takes for the internalisation process to occur and at what stage continuation is achieved is still unclear and needs more investigation (Rodgers et al., 2010; Wasserkampf & Kleinert, 2016)

3.1.6.2. Overview of SDT mini theory Basic Psychological Needs Theory (BPNT) informing WE:ROAM

BPNT was selected to inform the WE:ROAM study because a key aspect of BPNT is that human motivation requires the satisfaction of three innate psychological needs. These psychological needs are competence which relates to a sense of confidence and ability to perform a task well; autonomy which is embodied by a sense of personal ownership and control; and relatedness which is characterised by experiencing a connection to and understanding with important others (Deci & Ryan, 2000; Ryan & Deci, 2000).

3.1.6.2.1. The initiation of behaviour change – from the BPNP theory

The concept of BPNS works on the premise that human flourishing requires the satisfaction of the three basic needs, and is diminished significantly when there is a lack of BPNS (Deci & Ryan, 2000). In relation to the initiation of behaviour change, the motivation to initiate an activity can often be driven by a recognition that basic needs are not being met. As such, action needs to be taken to reverse the absence, or minimal existence, of need satisfaction. For example, older adults become aware of the need to remain independent as they age (Solberg et al., 2013). In order to live independently, and perhaps not become a burden to children, many older adults recognise a need to reverse the creeping loss of physical function, muscle atrophy and avoid the on-set of chronic health conditions by becoming more physically active (Kirkland et al., 2011; Solberg et al., 2013; Stephan et al., 2010). Similarly, older adults are also vulnerable to increasing social isolation and bereavement as they age (Hemingway & Jack, 2013; Unger, Johnson, & Marks, 1997). Due to this, older adults will potentially be motivated to seek out more social opportunities to reverse loneliness and social isolation (Capalb et al., 2012; Solberg et al., 2013; Unger et al., 1997).

3.1.6.2.2. The continuation of behaviour change – from the BPNT theory

Within SDT theory, need satisfaction is one of the key tenets associated with behaviour maintenance (Ryan & Deci, 2007). Especially in relation to PA, the satisfaction of basic needs is predicted to facilitate and sustain motivation (Ryan et al., 2009). Human performance is more robust when psychological needs for autonomy, competence and relatedness are satisfied. Supports for autonomy, competence and relatedness result in the satisfaction of those needs which produces a robustness, linked to optimal motivation and wellness (Ryan & Deci, 2007). This gives both physiological and psychological health a

boost, and is therefore more likely to lead to maintenance of behaviour (Ryan & Deci, 2007; Wilson et al., 2008). Once the three needs are satisfied, optimal motivation and a full sense of wellbeing can be achieved (Deci & Ryan, 2000; Ryan et al., 2009; Ryan & Deci, 2000). As discussed in the OIT section, need satisfaction is closely linked to the internalisation of behavioural regulation. Need satisfaction can result in the internalisation of behavioural regulation which in turn leads to increased or sustained PA (Teixeira et al., 2012)

3.1.6.2.3. The importance of the social and environmental setting in the maintenance of behaviour – from the BPNT theory

The social environment plays a significant role in the satisfaction of the three psychological needs, and can either facilitate or thwart intrinsic motivation (Ryan et al., 2009). Social contexts and environments that support the satisfaction of these basic needs facilitate personal growth activity leading to intrinsically motivated behaviour. In contrast, environments and social contexts that thwart competence, relatedness and autonomy, are associated with poorer forms of motivation (Deci & Ryan, 2000). For example, in relation to relatedness, a change of coach or activity leader could result in an increase or reduction in need satisfaction depending on the degree of connection with the coach (Ryan et al., 2009). Similarly, in relation to autonomy and competence, the location of the activity may be changed with little warning, to a more difficult to reach location and a more challenging environment (Deci & Ryan, 2000). As such, the degree of competence and autonomy could reduce overnight (Ryan et al., 2009).

The optimal social and environmental context can be described as a need supporting environment. This needs supportive environment has three key dimensions: autonomy support; structure (also known as competency support) and involvement (also referred to as relatedness support) (Deci & Ryan, 2000; Silva et al., 2010; Solberg et al., 2012). Autonomy support can be used inter-changeably with needs support and the literature recognises that discussions around autonomy support encompass the additional competency and relatedness aspects of needs support (Silva et al., 2010; Solberg et al., 2012). The achievement of needs support, with resulting need satisfaction facilitates intrinsic motivation and internalisation of behavioural regulation.

3.1.6.3. Overview of Subjective Vitality (SV) selected to help inform the WE:ROAM study

SV was selected to help inform WE:ROAM because SV is important within SDT to the initiation and maintenance of PA behaviour. It is described as a feel good factor that people wish to hang on to, and once it is being experienced, it can result in maintenance (Ryan & Frederick, 1997). When someone experiences high levels of SV, this manifests as a positive sense of aliveness, enthusiasm, spirit, providing energy to the self. When it is lacking or limited, people describe themselves as feeling drained (Ryan & Frederick, 1997). SV is linked to need satisfaction and the internalisation of behavioural regulations (Nix, Ryan, Manly, & Deci, 1999; Ryan & Frederick, 1997). Conditions which support need satisfaction are likely to be associated with a greater subjective sense of vitality (Ryan & Frederick, 1997) . In reverse, activity that is need thwarting will potentially undermine positive experiences of SV, resulting in those feelings of listlessness (Ryan et al., 2009). SV is particularly important to PA because PA is also associated with greater vitality, but only when the three psychological needs are satisfied (Ryan et al., 2009).

SV is associated with both physiological and psychological health. From a psychological perspective, SV is an important concept to consider because it is also an indicator of well-being. From a physical health perspective, SV can be positively or negatively associated with physical health. For example, the existence of chronic pain will have a negative impact on SV, which can counter any potential psychological boosts to SV. Therefore, not only can the feelings created by ill-health impact on SV, but the subsequent impact on ability and competence to function plus maintaining independence are also implicated (Ryan & Frederick, 1997). SV can diminish with increasing age, so looking at ways to boost vitality in older adults is considered an important research topic (Solberg et al., 2012).

3.1.6.3.1. Link between SV and the initiation of behaviour

Similar to the link between BPNS and initiation, SV can be associated with initiation due to a desire to experience more SV where it has become diminished. Unfortunately, older adults as they age are more likely to experience a reduction in physical function, chronic health conditions and some mental health problems such as depression or dementia (Fei et al., 2013; Koeneman et al., 2011). This can have a negative impact on vitality levels, so for those suffering diminished vitality, a desire to undertake activity to help boost vitality can

be a trigger to initiate activity such as being more active (Capalb et al., 2012; Solberg et al., 2012)

3.1.6.3.2. Link between SV and the continuation of behaviour

SV is linked to behavioural perseverance and performance because desire to maintain that feel good feeling will potentially result in persistence with the behaviour (Nix et al., 1999; Ryan & Deci, 2007). For many people, they experience a sense of being more alive and energised after engaging in PA, and not diminished in energy (Ryan & Deci, 2007). Enhanced vitality is a side effect of needs being met resulting in SV and well-being which in turn leads to maintenance of behaviour (Ryan & Deci, 2007). SV can be quite a fragile entity, and difficult to predict. For example, activities that require effort, expenditure and/ or endurance, which can induce feelings of trepidation and intimidation, can also result in enhanced vitality (Ryan & Deci, 2007). However, undertaking PA at higher intensity levels, especially beyond the point of heavy breathing, can result in a significant loss of pleasure going into displeasure and this can have a negative impact on well-being (Segar & Richardson, 2014). SV is also linked to need supporting environments, particularly environments such as green and blue space (Marselle, Irvine, Lorenzo-Arribas, & Warber, 2014). Outdoor environments with natural elements seem to enhance SV and energy generally (Chatzisarantis & Hagger, 2007).

3.1.7. SDT and older adults

Many of the tenets of SDT explained and discussed above are evident in SDT research dedicated to older adults. SDT has been described as an excellent framework to interpret the range and depth of PA related older adult motives (Dacey et al., 2008; Kirkland et al., 2011; Solberg et al., 2012). Older adult PA research has identified the importance of exploring older adult motivations separately because the strength of associations between motivational regulations and PA behaviour are known to vary across age groups (Brunet & Sabiston, 2011). SDT is therefore an ideal theory to explore older adult PA motives because researchers have recognised the multi-dimensional nature of older adult motivation. These motivations include enjoyment, pursuit and maintenance of good health, social contact and fitness (Dacey et al., 2008; Kirkland et al., 2011; Koeneman et al., 2011; Stephan et al., 2010; Stiggelbout et al., 2008).

Specifically in relation to behavioural regulation and health, issues such as maintaining good health, avoiding age related decline to function, keeping fit and flexible and maintaining fitness related independence bring with them a range of both autonomous and controlling forms of behavioural regulation (Dacey et al., 2008; Stephan et al., 2010). Unfortunately, many chronic health conditions manifest in older age, and this can impact motivational regulation (Sheldon, 2003). Although older adults do recognise the health benefits of PA, chronic health conditions can impede and diminish motivation to take part (Koeneman et al., 2011; Nour et al., 2007). The on-set of older age brings the likelihood of health related challenges, which could undermine intrinsically motivated behaviour (Solberg et al., 2013). Issues associated with fear of pain and lack of vitality can also have an impact on behavioural regulation (Koeneman et al., 2011; Nix et al., 1999).

Specifically in relation to psychological need satisfaction from the perspective of older adults, it is especially important in relation to daily function and daily living (Hemingway & Jack, 2013; Solberg et al., 2013). Need satisfaction for older adults can manifest as a fundamental desire to maintain an independent life (autonomy); an ability to operate effectively and confidently within their environment, without the need to rely on others (competence) and maintaining good social links in the face of higher widow/widower status and living alone (relatedness) (Solberg et al., 2013; Solberg et al., 2012). In addition to this, vitality levels within this age group are subject to both changes in age related physical and mental health conditions (Solberg et al., 2012). Research in nursing homes has highlighted that the satisfaction of needs for both autonomy and relatedness in daily life were positively related to well-being, perceived health, life satisfaction and vitality (Deci & Ryan, 2000; Solberg et al., 2013).

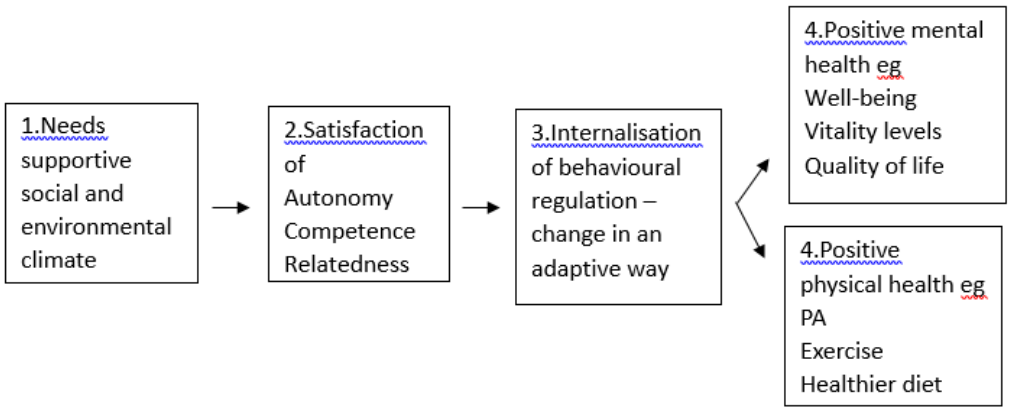
3.1.8. The relationship between the supportive social environment, need satisfaction, internalisation of behaviour and sustained PA/Vitality

This section identifies how behavioural regulation, need satisfaction, social and environmental settings and vitality can be linked together in an SDT behaviour change pathway (Ryan et al., 2008). This behavioural change pathway depicts how SDT is focused on these inter-connecting processes that enable people to acquire motivation for initiating new health related behaviours such as PA, and then maintaining them over time. A pictorial

representation of the behavioural change pathway is also provided to aid understanding (see figure 11 below).

In explanation of the behaviour change process, according to SDT, the maintenance of behaviours such as PA over time requires individuals to internalise values and skills to facilitate change and to subsequently experience self –determination (Ryan et al., 2008; Ryan et al., 2009). Part of this process involves maximising each person's autonomy, competence and relatedness experience. The satisfaction of these three psychological needs is a direct consequence of the need supportive social and environmental setting underpinning the activity. As a consequence, self-regulation and maintenance are more likely to be achieved over time, which are conducive to health and well-being such as vitality (Adie, Duda, & Ntoumanis, 2008; Ryan et al., 2008; Ryan et al., 2009). The pictorial figure 11 below sets out the flow between each of the key SDT tenets.

Figure 11: depicts the four inter-connecting SDT health behaviour change/maintenance pathway



3.1.9. SDT walking literature

In relation to specific SDT walking literature, there is a small but growing body of research related to walking using SDT as a supporting framework. In fact, SDT has been recognised as an evidence based framework for providing health promotion messages in a walking context for the general population (Segar & Richardson, 2014). An overview of this SDT

walking literature is provided below. This overview has been set out to identify which SDT walking studies have addressed aspects of the four inter-connecting stages from the health behaviour change/maintenance model depicted in figure 3: need supportive social and environmental settings, need satisfaction, behavioural regulation, especially internalisation of behavioural regulation and links to ongoing walking and vitality.

3.1.9.1. Evidence that need satisfaction is related to enhanced behavioural regulation

The SDT walking literature found evidence of a relationship between need satisfaction and internalised behavioural regulation. Niven & Markland (2015) measured the inter-relationship between need satisfaction and enhanced behavioural regulation. Part of this testing included the use of new walking specific instruments specifically designed for this study. These instruments measured need satisfaction and behavioural regulation for walking. Niven & Markland (2015) reported that need satisfaction was positively associated with more autonomous motivation, although the correlations were not strong. However, Niven & Markland (2015) concluded that creating the right social environment in a walking initiative could provide opportunities to experience the three psychological needs, which in turn encourages more autonomous forms of motivation.

Another study included a walking programme within a broader intervention called football fans in training. This study specifically identified a relationship between need satisfaction and the internalisation of behavioural regulations. A qualitative pedometer based walking study for adult men attached to football clubs found evidence of internalised regulation (Donnachie et al., 2017). This internalisation was partly explained by autonomy and competence satisfaction. According to Donnachie et al. (2017), some participants experienced internalised behavioural regulations because they no longer needed to rely on the pedometer. Participants became confident and familiar with walking routines, so became self-reliant and happier to walk unsupported. This was reported by Donnachie et al. (2017), as a fully internalised process ultimately leading to maintenance.

A qualitative walking group study based in work-places also identified a relationship between need satisfaction and the internalisation of behavioural regulations (Kinnafick, Thøgersen-Ntoumani, & Duda, 2014). This study identified a series of motivational profiles allocated to participants who started, stopped, restarted or stayed walking. Participants

within the lapse/restart profile no longer experienced guilt, and used new-found skills to reschedule walking if the planned session did not occur. This aspect of the lapse/restart profile highlighted that behavioural regulations have internalised if guilt is no longer a motive. The achievement of autonomy and competence satisfaction resulting in new-found skills, over-rode feelings of guilt indicated a relationship between need satisfaction and internalisation of regulation.

3.1.9.1.1. What is the research gap?

There is evidence within the SDT walking literature establishing a positive relationship between need satisfaction and internalised regulation. This link was identified by Niven & Markland, (2015); Donnachie et al. (2017); and Kinnafick et al. (2014). None of these studies is older adult specific. However, two of these studies are set within a group-walking context. Therefore, there is a strong rationale to explore the relationship between need satisfaction and the internalisation of behavioural regulation in an older adult group-walking context.

3.1.9.2. Evidence of need satisfaction linked to more walking

The SDT walking literature also found evidence of links between need satisfaction and walking. According to Thorup et al. (2016), a sense of conscious walking due to experiencing competence was expressed by some participants. Confidence built up from understanding and recording walking activity on a pedometer resulted in ongoing positive conscious commitment to walking. In addition, the ability to tailor activity made participants more independent and therefore likely to do more walking. Some participants also experienced relatedness need satisfaction by involving family and friends which boosted further walking.

Specifically, in relation to competence satisfaction, Van Hoecke et al. (2014) reported that the structured walking programme, with concrete and realistic targets, resulted in increased walking at the end of the intervention and at follow up. In addition, the WALK programme, which was designed to have a less need supporting structure, had similar levels of increased PA at both time points because other unexpected need satisfaction occurred naturally due to the nature of walking. Finally, another study reported that autonomy need satisfaction, as a consequence of need support provided by the walk leaders, was a significant mediating influence on physical activity behaviour (Kinnafick, Thogersen-Ntoumani, Duda, & Taylor, 2013).

3.1.9.2.1. What is the research gap?

The SDT literature found links between need satisfaction and walking. Both Thorup et al. (2016) and Van Hoecke et al. (2014) older adult studies reported this finding, but neither are group-walking specific. Niven & Markland (2015) also reported this finding, based within a group walking setting. Therefore, there is a strong rationale for exploring this in an older adult group-walking context.

3.1.9.3. Evidence of autonomous behavioural regulation and more walking

There was also evidence within the SDT walking literature establishing a relationship between autonomous regulation and more walking. In relation to identified regulation, Thorup et al. (2016) reported that some participants were motivated to walk with intent due to perceived health benefits. As such, walking became a conscious activity supporting health. This identified regulation is a more self-determined form of extrinsic motivation, and it was recognised as a contributory factor towards participation. Participants felt motivated to reach their steps and targets because the activity was good for their health. The Kinnafick et al. study (2014) also reported a link between identified regulation and restarting walking behaviour. Participants within the lapse/restart profile saw a shift towards identified regulation during the timescale of the study, but only when walking had restarted. These findings are supported by a dog walking specific study (Lim & Rhodes, 2016). Participants within the dog study, who felt a strong sense of responsibility to walk their dogs, experienced the more autonomous identified regulation and due to this continued walking.

In relation to intrinsic motivation, the most autonomous type of motivation, there was evidence to support a link with continuing to walk. According to Van Hoecke et al. (2014), the WALK study had similar maintenance to the more need supportive COACH programme. This unexpected finding was explained as the result of participant intrinsic enjoyment for walking, which resulted in continued walking. The Donnachie et al. study (2017) and Kinnifick et al. (2014) also reported the importance of intrinsic motivation to continuation. Both of these studies highlighted the development of enjoyment within maintainers such as experiencing the positive endorphins, and enjoying different aspects of walking at different time points. The dog walking study (Lim & Rhodes, 2016) highlighted that participants on the study enjoyed the activity of walking with their dogs.

3.1.9.3.1. What is the research gap?

There was a lot of evidence within the SDT walking literature of a link between more autonomous forms of regulation and more walking. The van Hoecke et al. (2014) study was older adult specific, but not group specific. The Kinnafick et al. (2014) study was group walking related, but not older adult specific. The Donnachie et al. study (2017) was neither older adult nor group walking specific. As such, there is a clear rationale to explore links between autonomous behavioural regulation and more walking.

3.1.9.4. Evidence of a link between need satisfaction and vitality

The Donnachie et al. (2017) study reported on vitality and a link to need satisfaction. Donnachie et al. (2017) recognised that need satisfaction resulted in both physical and mental health benefits. Some participants lost weight as a consequence of their walking, and grew in confidence as a result of support provided by the pedometer. This resulted in a new sense of self and enhanced vitality and well-being.

3.1.9.4.1. What is the research gap?

There was evidence in one SDT walking study supporting a relationship between need satisfaction and vitality. However, this study was neither older adult, nor walking group specific. As such, there is a clear rationale to explore this relationship within an older adult, group walking setting.

3.1.9.5. Evidence of a link between behavioural regulations and vitality

Within the SDT walking literature, the Donnachie et al. study (2017) recorded qualitative findings that linked intrinsic motivation with a renewed sense of self and increased sense of vitality. Donnachie et al. (2017) concluded that the men in the study had internalised their behavioural regulations, resulting in such feelings of increased vitality.

3.1.9.5.1 What is the research gap?

There is evidence in one SDT walking study supporting a relationship between the internalisation of behavioural regulations and vitality. However, this study was neither older adult, nor walking group specific. As such, there is a clear rationale to explore this relationship within an older adult, group walking setting.

3.1.10. The creation of the WE:ROAM study

As older adults are one of the least active groups in Scotland, it is essential to successfully reverse levels of inactivity in this age group, especially as the older adult population is set to rise rapidly in the next few decades (The Scottish Government, 2015b, 2018, 2020). Understanding older adult motivations for PA has been described as critical to the consideration of maintenance of regular PA and associated health outcomes (Dacey et al., 2008; Kirkland et al., 2011; Stephan et al., 2010). Exploring older adult motivations, particularly for walking, could be advantageous because walking has been identified as a preferred mode of PA for older adults (Pelssers et al., 2013; The Scottish Government, 2014). Older adults may turn to walking for health, whereas a younger adult may choose a more vigorous activity (Brunet & Sabiston, 2011). Extending the focus of motivations for older adult walking to encompass group walking could also be beneficial because group activity has been recognised to provide additional attractive elements for this age group. These elements include social support and self-confidence due to not exercising alone (Farrance et al., 2016; Grant et al., 2017a). Therefore, walking in groups, especially for inactive adults, could induce involvement where other forms of PA may not (Kassavou et al., 2013). Consequently, understanding motivational triggers and motivational maintenance for older adults involved in group walking may help to inform older adult PA interventions and strategies for reversing high levels of inactivity.

The following section defines the creation of the WE:ROAM study. The section provides an explanation for its group walking context, the specific purpose of WE:ROAM and how it attempts to explore and analyse older adult motivations for walking during both the initiation and continuation phases. It defines how specific SDT tenets were built into the WE:ROAM study in order to test and measure motivational characteristics during both initiation and continuation phases of older adult group walking. It also defines how motivational changes, as predicted in the health behaviour change pathway, were measured between the initiation and the continuation phases. Finally, the section then details the specific research questions addressed for this study.

3.1.10.1. Overall purpose of the WE:ROAM study

The overall purpose of the WE:ROAM study was to understand the motivational factors that influenced the initiation and continuation of older adults walking in PfA groups. Tenets

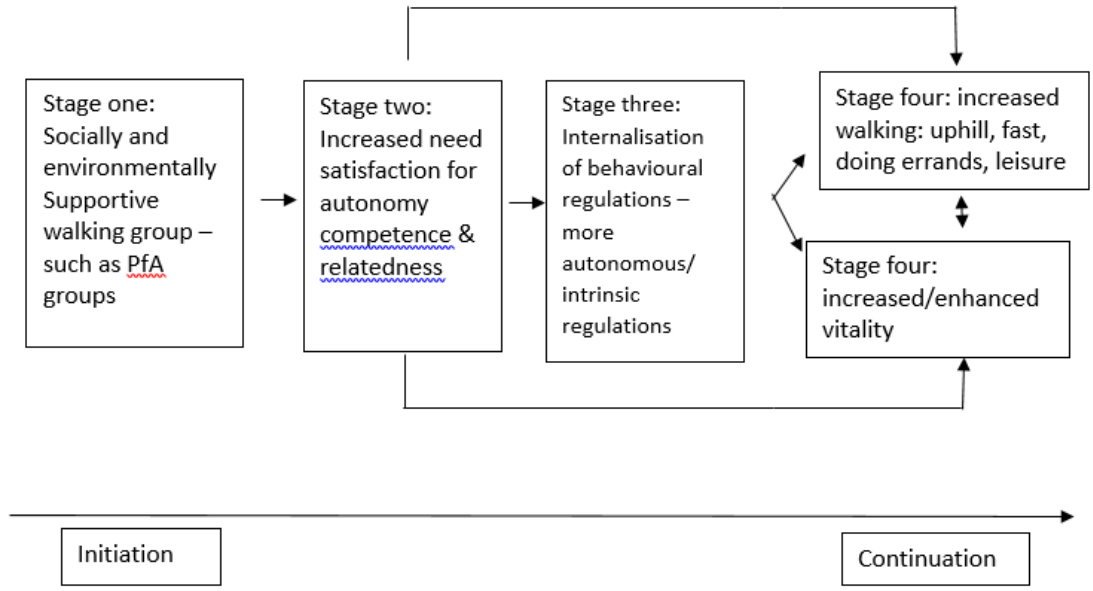
of the motivational theory SDT were tested within an SDT behaviour change pathway to identify and understand the motivational factors that influence the initiation and continuation of older adults walking in PfA groups.

3.1.10.2. Aims of the WE:ROAM study

The anticipated SDT behaviour change pathway for the WE:ROAM study is depicted below in figure 12. The focus of the WE:ROAM study was from stage two to stage four inclusively of the figure. For the purpose of this study, we assumed that stage one (the socially supportive environment) was already being provided by PfA walking groups. The first aim of the WE:ROAM study was to examine how SDT variables and walking from stages two to four of the SDT behaviour change pathway increase/change between the time point one (initiation) and time point two (continuation) of older adult group walking. The second aim of the WE:ROAM study was to examine how the SDT variables and walking from stage two to four of the behaviour change pathway are related to each other during the change from time point one and time point two.

A third aim of the WE:ROAM study was to identify the relationships between the SDT variables and walking outcomes as depicted in figure 12 (from stage two to four) at time point one only – if no changes of significance were identified between time point one and time point two. Time point one would be chosen in this eventuality.

Figure 12: Purported changes between need satisfaction, behavioural regulation, walking and vitality during the initiation and continuation phases of walking that support the SDT behaviour change pathway



3.1.10.3. Specific research questions

The research questions to address the specific aims of the WE:ROAM study were:

1. Does need satisfaction for autonomy, competence and relatedness increase; do behavioural regulations change in an adaptive way; does vitality increase; and does walking increase from time point one (initiation) to time point two (continuation) of group walking?
2. What is the relationship between changes within the variables from time point one (initiation) to time point two (continuation) specifically in relation to: a) need satisfaction and behavioural regulation; b) need satisfaction and vitality; c) behavioural regulation and vitality; d) need satisfaction and walking; e) behavioural regulation and walking; and f) vitality and walking?
3. If no change is reported between time point one (initiation) and time point two (continuation), what are the relationships between variables at time point one (initiation) as set out in question 2?

3.2. Methods

3.2.1. Participants

Following Institutional ethics approval (Appendix 1), participants were selected from a network of Paths for All (PfA) walking groups throughout Scotland. PfA is a Scottish charity committed to promoting walking for health for everyone, every day and everywhere, and provide over 550 walks throughout Scotland per week . A more detailed outline of PfA is provided in the introductory chapter. Participants were eligible to join the WE:ROAM study from any of these walks if they were aged 65 years or above and within the initiation phase of walking with their PfA walking group. The definition of the initiation phase is detailed in study design below. There were no health restrictions limiting participation. Similarly, there were no chronic illness requirements in order to participate.

3.2.2. Procedures

3.2.2.1. Study design

WE:ROAM was designed as a longitudinal study gathering data at two time points: during both the initiation and continuation phases of group walking. For the purposes of this study, the initiation phase was defined as up to six months of attendance and the continuation phase was defined as six months and over (van Stralen et al., 2009). There was a minimum of at least six months between the collection of data between both time points. In order to accommodate these timescales, the data collection of the study was live from February 2017 to August 2018.

3.2.2.2. Recruitment process and supporting documentation

3.2.2.2.1. Recruitment strategy

In order to attempt to recruit and retain participants to the study, a recruitment strategy was designed and implemented. The strategy was created in line with recommendations from a systematic review to recruit participants to walking intervention studies (Foster et al., 2011). There were four strands to the strategy as detailed below.

Strand one - utilisation of network of coordinators and walk leaders

A network of PfA walking coordinators and leaders was utilised. Walk coordinators and walk leaders are familiar with, and have first contact with new walkers. Participants for the WE:ROAM study were recruited by walk leaders and walk coordinators and not by the first researcher. This was due to the difficulty of anticipating exactly when and where new start walkers would join within Scotland. In order to support walk coordinators and walk leaders through the recruitment process, the recruitment strategy was devised to maximise potential recruitment.

Strand two - publicity programme/prize draw

Secondly, a publicity programme was devised to promote the study widely. This included networking events with PfA recruiters and a WE:ROAM video was created to promote the study via social media. All participants who completed at both time points were also entered into a prize draw and were eligible to receive vouchers or PfA merchandise, provided by PfA.

Strand three – create WE: ROAM study brand

Thirdly, a brand for the study was created to make it recognisable including the WE:ROAM name, logo, plus colourful and age appropriate resource material (see appendices 2 - 4).

Strand four – undertake a comprehensive pilot study

Finally, a pilot recruitment process was undertaken to test two recruitment and data collection options. The pilot study recruited 29 participants, 23 women and 6 men. Four walking groups provided participants for the pilot study at four group sessions. Two sessions were run by the lead researcher and two were run by a walk coordinator. As all participants for WE:ROAM were recruited by walk leaders and coordinators, it was important to test the recruitment process without the attendance of the lead researcher. At the group sessions, the participants completed a questionnaire which contained all of the data collection instruments. There were also two telephone interviews where the lead researcher read out the questionnaire over the telephone and recorded participant scores directly. The result of the pilot confirmed a tolerance for the data collection instruments by participants. It also identified it was much quicker for the lead researcher to record

participant scores via the telephone, as this eliminated the need for participants to read each questionnaire and learn the scoring mechanisms. It also ensured the lead researcher had immediate access to participant answers, and could input scores onto an online survey. Obtaining consent via the telephone also ensured consent was collected and stored (see appendix 5 for the verbal consent wording and permission capture). Direct contact by the lead researcher with participants on the telephone also enabled a rapport to be developed between the lead researcher and participants. This rapport development helped to encourage participants to carry on with the study at the second time point. As a consequence, over 80% of participants were retained for the study.

However, data collection carried out by the lead researcher alone via the telephone, created a practical consideration for recruitment numbers. Data gathering twice per participant, with data collection taking around 15 minutes during the pilot, ensured a minimum amount of time collecting data to be 30 hours with 60 participants, or 50 hours with 100 participants. This did not include additional calls to set up data collection appointments, and the data transcribing and analysis process. During the development phase of the WE:ROAM study, two quantitative walking group studies were published. Kassavou et al. (2013) recruited 114 participants who had been walking for at least three months. Kinnafick et al. (2013), using SDT methodology, recruited 69 participants. Both studies were part of PhD research programmes with a similar design to this overall PhD programme. As such, a realistic recruitment aim of between 60 and 100 participants was the study aim.

3.2.2.2.2. Recruitment process

Participants were recruited by walk coordinators and walk leaders. Information sheets and post-cards publicising the study were created by the first researcher (see appendices two, three and four). There were two information sheets: one aimed at participants and another for walk coordinators/ walk leaders. The double-sided post card was for participants. One side of the post card contained brief information about the study and contact details for the lead researcher. The other side contained a space for participants to record preferred times and dates to be contacted. The information sheets and post cards were sent out to walk group coordinators in the first instance. Walk coordinators then forwarded a supply to their walk leaders.

Once the data collection period went live, all new walkers were asked by walk leaders if they would like to take part in the study as they joined new groups. Walk leaders also asked eligible walkers who had been walking for less than six months if they would also like to take part. The information sheet and post card were made available to all eligible new walkers if they expressed an interest in taking part in the study. Walk coordinators and walk leaders were also informed by the lead researcher that electronic copies of the information sheets and postcards were also available to download from the PfA website.

Those participants who chose to take part in the study completed their contact details on the postcard and provided preferred times and dates for contact. Completed post cards were handed back to walk leaders or walk coordinators. The walk leader or walk coordinator then either emailed a scanned copy of the postcard to the first researcher, or telephoned the researcher with the participant contact details and preferred times. Hard copies of the postcards were then forwarded to PfA head office together with the new walker forms. A PfA development officer collected the completed hard copies of the postcards, and handed them to the first researcher at regular intervals during the live phase of the study.

3.2.2.3. Data collection, consent and timeline

The first researcher collected all data via telephone calls to participants. At the first data collection point, during the initiation phase, a call was made to participants at their preferred date and time. Verbal consent to partake was requested and subsequently recorded. At the end of data collection, the researcher requested permission to contact the participant again at least six months later, whether they continued to walk with the walking group, or had discontinued walking with the group. At the second data collection time point during the continuation phase, the researcher phoned again and checked to see if the participant wished to continue. If the participant agreed, the same data was collected again. All participants who completed data at both time points were entered into a prize draw as a thank you for taking part in the study.

3.2.3. Measurements

3.2.3.1. Psychological Need Satisfaction for Walking Scale (PNSWS)

The PNSWS is an 18 item questionnaire measuring the three need satisfaction subscales of autonomy, competence and relatedness (Niven & Markland, 2015). The PNSWS was also adapted by Niven & Markham (2015), from the Psychological Need Satisfaction for Exercise Scale (Wilson, Rogers, & Rodgers, 2006a). The PNSES was developed to measure the satisfaction of three specific human needs for autonomy, competence and relatedness, as experienced during exercise (Wilson et al., 2006a). Like the BRWS, the words walk and walking have replaced the words exercise or exercising throughout the PNSWS questionnaire (Niven & Markland, 2015). The layout of the PNSWS is very similar to the PSNES, and the measures remain the same within the questionnaire. However, there were minor changes to the wording on some questions (Niven & Markland, 2015). Participants respond to each question using a five point Likert scale from 1 = disagree to 5 = agree. The PNSES originally had six points to the scale (Wilson et al., 2006a).

3.2.3.2. Behavioural Regulations in Walking Questionnaire (BRWQ)

The BRWQ is a 23 item questionnaire measuring six behavioural regulations for walking: amotivation, external regulation, introjection, identified, integrated and intrinsic regulation (Niven & Markland, 2015). The BRWQ was adapted from the Behavioural Regulations in Exercise Questionnaire -2 (BREQ-2) in order to specifically measure walking outcomes rather than exercise in general (Niven & Markland, 2015). The words walk or walking replace the words exercise or exercising (Niven & Markland, 2015). Apart from this change, the layout and measures of the motivational regulation questionnaire remains the same, and is based on the BREQ-2 (Markland & Tobin, 2004). The BREQ-2 contained subscales to measure amotivation, external regulation, introjection, identified and intrinsic regulation. The additional regulation, called integrated regulation, which sits between identified and intrinsic regulation, was subsequently added (Wilson et al., 2006b). Participants respond to each question using a five point Likert scale from 0 = not true for me; to 4 = very true for me (Niven & Markland, 2015).

3.2.3.3. Subjective Vitality six-item scale

The Subjective Vitality six item scale is a questionnaire measuring subjective vitality (Bostic, McGartland Rubio, & Hood, 2000). This six part scale is based on the original seven item

scale measuring vitality, the state of feeling alert and alive and to having energy available to the self. The scale assesses feelings of aliveness and vitality, having energy and spirit and feeling alert and awake (Ryan & Frederick, 1997). Of the seven items included in the original seven item scale, one was negatively worded and subsequently reversed scored (Ryan & Frederick, 1997). The six-scale item created by Bostic et al. (2000) identified that the negatively worded question was not functioning well, and the six scale item functioned better as a measure of the construct of vitality. The six questions within this vitality scale record participants' responses to each question using a 7 point Likert scale from 1 = not true at all to 7 = very true (Bostic et al., 2000).

3.2.3.4. The Community Health Activities Model Program for Seniors (CHAMPS) – walking questions only

The CHAMPS questionnaire is a 41 item measure designed specifically for assessing the weekly frequency of all types of PA undertaken by older adults (Stewart et al., 2001). Intensity levels are also captured within the questionnaire, with all types of PA allocated an anticipated metabolic equivalent score (Stewart et al., 2001). The CHAMPS questionnaire was selected because it was praised in a systematic review of older adult physical activity measurement tools (Falck, McDonald, Beets, Brazendale, & Liu-Ambrose, 2016) . Falck et al (2016) identified that the CHAMPS questionnaire has a good assessment of walking, which is important because walking is the most common form of PA for adults. Falck et al. (2016) also identified that self-report measurement tools for older adults need to include a measure of intensity for walking (Falck et al., 2016). The systematic review criticised the lack of intensity measures in older adult assessment tools generally (Falck et al., 2016).

However, the complete CHAMPS questionnaire is a long and detailed measure, recording all forms of PA. With a specific focus on walking, the detail of other forms of PA were not required for the WE:ROAM study. The four walking questions only were selected: walk uphill, walk fast, walk to do errands and walk for leisure. The four specific types of walking within the CHAMPS measure incorporated two frequency types: moderate and light. Walking uphill and fast were allocated a moderate intensity. Walking to do errands and for leisure were classified as light intensity. The walking questions within the CHAMPS questionnaire measures the frequency and time spent undertaking four specific types of walking within an average week. Each of the four walking questions establishes how many times in a week this type of walking was undertaken and how much time that amounted to

(Stewart et al., 2001). There are six categories of time to select from to identify the duration of walking: less than one hour up to nine or more hours. For the purposes of WE:ROAM, this was amalgamated into two categories. Category one was greater than one hour and category two was less than one hour.

3.2.4. Missing data

There were 61 participants who completed questionnaires during the initiation phase of the study. There were 49 of those 61 who completed the same questionnaires during the continuation phase of the study. Twelve participants did not respond to follow up contact, and therefore did not complete data at the second time point and were excluded from any of the analysis.

3.2.5. Data analysis

Data were analysed using SPSS version 22 (SPSS version 22.0, IBM, Inc., Chicago, IL) Descriptive data reported for demographic variables included the mean score and standard deviation (SD) for age and for how long participants had been walking with a group at the first data collection point during the initiation phase. Initially, for the continuous variables the assumptions of parametric testing were checked by considering normal distribution. Shapiro Wilk (Field, 2005) and visual interpretation of histograms identified that for behavioural regulations, need satisfaction and vitality variables, all but two variables were positively skewed ($p<0.05$). Of the other two variables, one was normal and the other was negatively skewed. Due to this, non-parametric tests were selected as most appropriate for undertaking the analysis. Statistical significance (p) was set at <0.05 and effect sizes (r) where appropriate were denoted as 0.10 to 0.30 small effect, 0.30 to 0.50 medium effect and 0.50 large effect (Cohen, 1988).

3.2.5.1. RQ1: analysis to assess if autonomy, competence and relatedness need satisfaction increases; behavioural regulations change in an adaptive way; vitality increases; and walking increases from the initiation to the continuation phases of group walking?

Non parametric one tailed Wilcoxon Signed-Rank tests for related samples (Field, 2005) were undertaken to compare the PNSWS, BWRQ and Vitality variables between the initiation and continuation phases to see if adaptive change or increases had taken place. Both the median and range, and the mean scores and standard deviation were reported. Significance was denoted by $(p) < 0.05$ and the effect size denoted by r. Given the categorical nature of the walking data from the CHAMPS, Pearson chi squared tests were undertaken (Field, 2005) to compare the change between the initiation and continuation phases for the four different types of walking, based on the frequency (number) of participants who were walking >1 hour and <1 hour in an average week at each time point. Significance (p) was identified using the Fisher's exact method for smaller samples, set as < 0.05. Odds ratios were calculated to denote the size of the effect.

3.2.5.2. RQ2 – What is the relationship between changes within the variables from initiation to continuation: a) need satisfaction and behavioural regulation; b) need satisfaction and vitality; c) behavioural regulation and vitality; d) need satisfaction and walking; e) behavioural regulation and walking; and f) vitality and walking?

Non parametric Spearman's correlation coefficient tests (Field, 2005) between change scores for each of the three types of need satisfaction within the PNSWS and the six behavioural regulations contained within BRWS, walking and vitality would have been conducted had changes from initiation from continuation been observed. Significance was denoted by $(p) < 0.05$ and r_s denoted the correlation coefficient.

3.2.5.3 RQ3 -If no change is reported between the initiation and continuation phases, what are the cross-sectional relationships at initiation between variables a) need satisfaction and behavioural regulation; b) need satisfaction and vitality; c) behavioural regulation and vitality; d) need satisfaction and walking; e) behavioural regulation and walking; and f) vitality and walking

Non parametric Spearman's correlation coefficient tests were undertaken (Field, 2005) to identify correlations between the three types of need satisfaction within the PNSWS and the six behavioural regulations contained within BRWS; the three types of need satisfaction contained within the PNSWS and vitality within the subjective vitality scale; and the six types of behavioural regulation within the BRWS and vitality within the subjective vitality scale. Significance was denoted by $(p) < 0.05$ and r_s denoted the correlation coefficient.

Non parametric Mann Whitney tests for independent samples (Field, 2005) for participants achieving > one hour of walking against those achieving < one hour of walking were also carried out to identify if there were differences between the three need satisfaction types, the six behavioural regulations, and vitality for all four walking behaviours. The mean rank was reported and significance (p) was denoted by < 0.05 and < 0.01.

3.3. Results

3.3.1. Recruitment

There were 61 participants recruited during the live data collection period of the study. All 61 completed the telephone combined questionnaire during the initiation phase of walking with the group. Of these 61, there were 49 who subsequently completed the assessment during the continuation phase of walking with the group.

3.3.2. Participant characteristics

Table 4 details the mean age and standard deviation of all participants, and also by gender who completed data at both time points. It also provides the average time walking for each category. Both the age and time spent walking were recorded at the first time point.

Table 4: Baseline characteristics of WE:ROAM participants for whom there is a complete data set - the mean score, standard deviation, minimum/maximum ages are reported

	All participants complete data (mean and SD)	**Women complete data (mean and SD)**	**Men complete data (mean and SD)**
Number of participants	49	38	11
Age at first time point (years)	72.26 (5.52) 65.00 min 85.90 max	72.97 (5.50) 65.70 min 85.90 max	69.80 (5.08) 65.00 min 81.20 max
Average time walking (months) at first time point	2.76 (1.96)	2.74 (2.02)	2.82 (1.83)

3.3.3. Results relating to RQ1 : analysis to assess if autonomy, competence and relatedness need satisfaction increases; behavioural regulations change in an adaptive way; vitality increases; and walking increases from the initiation to the continuation phases of group walking?

3.3.3.1. Does autonomy, competence and relatedness need satisfaction increase; do behavioural regulations change in an adaptive way; does vitality increase

Consistent with reporting of non-parametric analysis such as Wilcoxon rank tests, Table 5 details the median and range for the six behavioural regulations from the BRWS, the three need satisfaction categories within the PNSWS and SV for both phases of group walking. Also included is the mean and SD to facilitate interpretation and comparison with other studies. There was no significant change from initiation to continuation for any of these variables, and the effect sizes were trivial.

3.3.3.2. Does walking increase from the initiation to the continuation phases of group walking?

Table 6 details the Fisher's exact test for smaller samples, which compares the changes between the initiation and continuation phases for each walking behaviour based on frequency (number) of participants walking. The reported changes to walking uphill, fast

and for errands were not significant and the odds ratios indicated minimal change from initiation to continuation. Participants were 2.4 times less likely to walk for leisure for more than an hour at continuation ($p<0.05$).

3.3.4. Results relating to RQ2: what is the relationship between changes within the variables from initiation to continuation: a) need satisfaction and behavioural regulation; b) need satisfaction and vitality; c) behavioural regulation and vitality; d) need satisfaction and walking, e) behavioural regulation and walking; and f) vitality and walking?

There were no significant changes between the WE:ROAM study variables between the initiation and continuation phases of walking in groups (as indicated by tables 5 and 6), and for this reason we did not consider the relationship between the 'change' data.

3.3.5. Results relating to RQ3: If no change is reported between the initiation and continuation phases, what are the cross-sectional relationships at initiation between variables a) need satisfaction and behavioural regulation; b) need satisfaction and vitality; c) behavioural regulation and vitality; d) need satisfaction and walking, e) behavioural regulation and walking; and f) vitality and walking?

3.3.5.1. What are relationships between behavioural regulations and need satisfaction variables?

There were five correlations of significance identified by the Spearman one tailed correlation coefficients for behavioural regulations and need satisfaction, as illustrated in table 8. As per the table, significant correlations were found for autonomy and five behavioural regulations in an adaptive way. Autonomy was significantly negatively correlated with amotivation and external regulation. Autonomy was also significantly positively correlated with identified, integrated and intrinsic motivation. Competence was positively significantly correlated with integrated regulation. Relatedness was significantly negatively correlated with external regulation and positively significantly correlated with intrinsic motivation. These findings all support the purported behaviour change pathway where need satisfaction, especially autonomy, is correlated in an adaptive way to behavioural regulation which means that need satisfaction is significantly negatively

correlated with controlled and external types of motivation and significantly positively correlated with more self-determined forms of regulation.

Although there is a significant positive correlation between competence and integrated regulation, it is the only relationship of significance. Similarly, relatedness has two adaptive correlations with external regulation and intrinsic motivation, but no others. These findings suggest that autonomy need satisfaction is related to the internalisation of behavioural regulation. Autonomy need satisfaction is related to and may result in a reduction of external regulation, including amotivation and external regulation. At the same time autonomy need satisfaction is related to and may lead to increases to more self-determined regulation with the exception of introjected regulation.

Table 5: Wilcoxon Signed rank single tailed test to report the mean and standard deviation of the initiation and continuation scores for PNSWS, BRWQ, and SVS variables

	N	Initiation Mean (SD)	Continuation Mean (SD)	Initiation Median (range)	Continuation Median (range)	P-Value	r
PNSWS							
Autonomy	49	4.46 (0.68)	4.51 (0.62)	4.67 (2.33 – 5.00)	4.83 (2.50 – 5.00)	0.65	-0.05
Relatedness	49	4.51 (0.68)	4.45 (0.92)	4.67 (1.33 – 5.00)	4.83 (1.00 – 5.00)	0.74	-0.03
Competence	49	3.79 (0.99)	3.62 (1.14)	4.00 (1.33 – 5.00)	3.83 (1.00 – 5.00)	0.48	-0.07
BRWS							
Amotivation	49	1.16 (0.34)	1.11 (0.41)	1.00 (1.00 - 2.00)	1.00 (1.00 – 3.00)	0.30	-0.11
External	49	1.61 (0.91)	1.64 (1.01)	1.00 (1.00 - 4.25)	1.00 (1.00 – 5.00)	0.97	-0.00
Intojection	49	2.47 (1.17)	2.48 (1.26)	2.33 (1.00 – 5.00)	2.33 (1.00 – 5.00)	0.86	-0.02
Identified	49	4.38 (0.68)	4.27 (0.66)	4.50 (1.75 – 5.00)	4.50 (2.00 – 5.00)	0.19	-0.13
Integrated	49	3.87 (1.06)	3.85 (1.05)	4.25 (1.00 – 5.00)	4.00 (1.00 – 5.00)	0.81	-0.02
Intrinsic	49	4.63 (0.60)	4.48 (0.91)	4.75 (2.00 – 5.00)	5.00 (1.00 – 5.00)	0.11	-0.16
SVS							
Vitality	49	5.73 (1.22)	5.56 (1.37)	6.00 (1.17 – 7.00)	5.67 (1.33 – 7.00)	0.56	-0.06

Table 6: Fisher's exact one tailed test to compare the changes between the initiation and continuation phases for all four walking behaviours based on the number of participants walking for greater than or less than 1 hour in a typical week

	Initiation phase		Continuation phase		P value	Odds ratio
Duration of time	>1 hour	<1 hour	>1 hour	<1 hour		
Walking – uphill (N)	16	33	17	32	0.50	0.91
Walking – fast (N)	19	30	18	31	0.50	1.09
Walking – errands (N)	33	16	29	20	0.27	1.42
Walking – leisure (N)	38	11	29	20	0.04	2.38

Competence need satisfaction is related to higher forms of integrated regulation and relatedness satisfaction is related to a reduction of external regulation and increase in intrinsic motivation.

3.3.5.2. What are the relationships between need satisfaction variables and SV?

Table 7 illustrates the correlations between need satisfaction and vitality. Like intrinsic motivation and vitality, there is a correlation of significance between relatedness and vitality. This finding suggests that a participant experiencing relatedness, will also experience vitality.

Table 7: Spearman one tailed correlations between PNSWS and SV during the initiation phase - p value and r_s representing correlation coefficient

	Vitality	
	P value	r_S
Autonomy	0.11	0.18
Competence	0.64	0.22
Relatedness	0.02*	0.27*

3.3.5.3 What are the relationships between behavioural regulations and SV?

Table 8 also details the results of the Spearman one tailed correlation coefficient tests for behavioural regulations and vitality. External regulation was significantly negatively correlated with vitality, indicating that vitality is diminished when external regulation is high. In contrast, intrinsic motivation, the most self-determined type of behavioural regulation, is correlated with vitality indicating that participants who experience intrinsic motivation are likely to experience vitality.

Table 8: Spearman one tailed correlations between BRWS and PNSWS during the initiation phase - p value and r_s representing the correlation coefficient

	Autonomy		Competence		Relatedness		Vitality	
	p value	r_s	p value	r_s	p value	r_s	p value	r_s
Amotivation	0.02	-0.31	0.50	0.00	0.40	-0.04	0.47	-0.01
External regulation	0.00	-0.39	0.32	-0.07	0.01	-0.33	0.05	-0.24
Introjected regulation	0.07	-0.19	0.13	0.17	0.17	-0.14	0.48	0.01
Identified regulation	0.02	0.30	0.48	-0.01	0.33	0.06	0.27	0.09
Integrated regulation	0.00	0.54	0.02	0.29	0.49	-0.00	0.25	0.10
Intrinsic	0.00	0.34	0.34	0.06	0.04	0.25	0.00	0.42

3.3.5.4 Differences in behavioural regulations and walking uphill, walking fast, walking for errands and walking for leisure (greater than or less than an hour per average week)

Table 9 displays the one tailed Mann Whitney tests for independent samples for participants who walked for more than an hour and those who walked for less than an hour for all four types of walking behaviour, to identify if there were differences in the six behavioural regulations. Those who walked uphill for more than an hour had a significantly greater amount of intrinsic motivation than those who walked for less than an hour. Additionally, those participants who reported walking fast for less than an hour had significantly higher scores on external regulation than those who walked fast for an hour.

3.3.5.5. Differences in need satisfaction and walking behaviour

Table 10 displays the one tailed Mann Whitney tests for independent samples for participants who walked for more than an hour and those who walked for less than an hour for all four types of walking behaviour, to identify if there were differences in the three need satisfaction variables. The only significant difference was found between those who walked for less and those who walked for more than one hour for leisure and relatedness, with those walking more scoring higher.

3.3.5.6. Differences in vitality and walking behaviour

Table 10 displays the one tailed Mann Whitney tests for independent samples for participants who walked for more than an hour and those who walked for less than an hour for all four types of walking behaviour, to identify if there were differences in the vitality variable. There were no significant differences.

Table 9: Mann Whitney one tailed tests comparing the differences in mean rank scores for walking for greater than one hour or less than one hour for four types of walking behaviour and BRWS during a typical week in the initiation phase

	Walk uphill				Walk fast				Walk errands				Walk leisure			
	>1 hour	< 1 hour	(p) value	r	>1 hour	< 1 hour	(p) value	(r)	>1 hour	< 1 hour	(p) value	(r)	>1 hour	< 1 hour	(p) value	(r)
N	16	33			19	30			33	16			38	11		
BRWQ																
Amotivation	22.47	26.23	-1.27	-0.17	24.71	25.18	0.48	-0.02	24.83	25.34	-0.16	-0.02	26.07	21.32	0.07	-0.19
External	20.94	26.97	0.06	-0.22	17.34	29.85	0.00	-0.47	22.56	30.03	-1.88	-0.27	26.09	21.23	0.14	-0.16
Introjected	23.06	25.94	0.26	-0.10	22.05	26.87	0.13	-0.17	22.88	29.38	-1.50	-0.21	24.28	27.50	0.26	-0.09
Identified	27.75	23.67	0.17	-0.14	27.18	23.62	0.20	-0.12	23.80	27.47	-0.86	-0.12	22.63	33.18	0.14	-0.31
Integrated	24.00	25.48	0.37	-0.05	27.66	23.32	0.15	-0.15	23.80	27.47	-0.85	-0.12	23.63	29.73	0.11	-0.18
Intrinsic	30.25	22.45	0.03	-0.27	25.47	24.70	0.43	-0.03	24.86	25.28	-0.10	-0.10	24.46	26.86	0.31	-0.08

Values are mean rank unless indicated otherwise

Table 10: Mann Whitney one tailed tests comparing the differences in mean rank scores for walking greater than one hour or less than one hour for four types of walking behaviour and PNSWS and SV during the initiation phase

	Walk uphill				Walk fast				Walk errands				Walk leisure			
	>1 hour	< 1 hour	(p) value	r	>1 hour	< 1 hour	(p) value	r	>1 hour	< 1 hour	(p) value	r	>1 hour	< 1 hour	(p) value	r
N	16	33			19	30			33	16			38	11		
PNSWS																
Autonomy	24.72	25.14	0.46	-0.01	29.03	22.45	0.55	-0.23	25.12	24.75	-0.09	-0.09	23.59	29.86	0.10	-0.19
Competence	26.34	24.35	0.33	-0.07	27.03	23.72	0.22	-0.11	22.44	30.28	-1.81	-0.26	27.50	16.36	0.11	-0.33*
Relatedness	24.53	25.23	0.44	-0.02	28.71	22.65	0.68	-0.21	24.48	26.06	-0.38	0.05	24.57	26.50	0.03	-0.06
Vitality																
SV	28.13	22.69	0.10	-0.18	26.66	23.09	0.20	-0.12	23.64	26.22	-0.60	-0.09	25.35	21.64	0.22	-0.11

Values are mean rank unless indicated otherwise

3.4. Discussion

The overall purpose of the WE:ROAM study was to understand the motivational factors that influenced the initiation and continuation of older adults walking in PfA groups. Tenets of the motivational theory SDT were tested within an SDT behaviour change pathway to identify and understand the motivational factors that influence the initiation and continuation of older adults walking in PfA groups. The WE:ROAM study set out to answer three specific research questions related to stages two to four inclusively of the SDT behaviour change pathway as depicted in figure 12. Question one aimed to identify if there were changes to behavioural regulations, need satisfaction, vitality and walking outcomes between time point one (initiation) and time point two (continuation). Question two aimed to identify relationships between any changes in behavioural regulation, need satisfaction, vitality and walking; between need satisfaction, vitality and walking: and between vitality and walking from time point one to time point two. If no changes were evident when addressing question one, then a third question aimed to identify the same relationships depicted in question two, but within one time point only. A summary of the main findings for the WE:ROAM study are set out below, followed by a discussion of the findings as they relate to each research question, and broader literature. This section ends with consideration of strengths and limitations of the study, areas for future research and implications for practice.

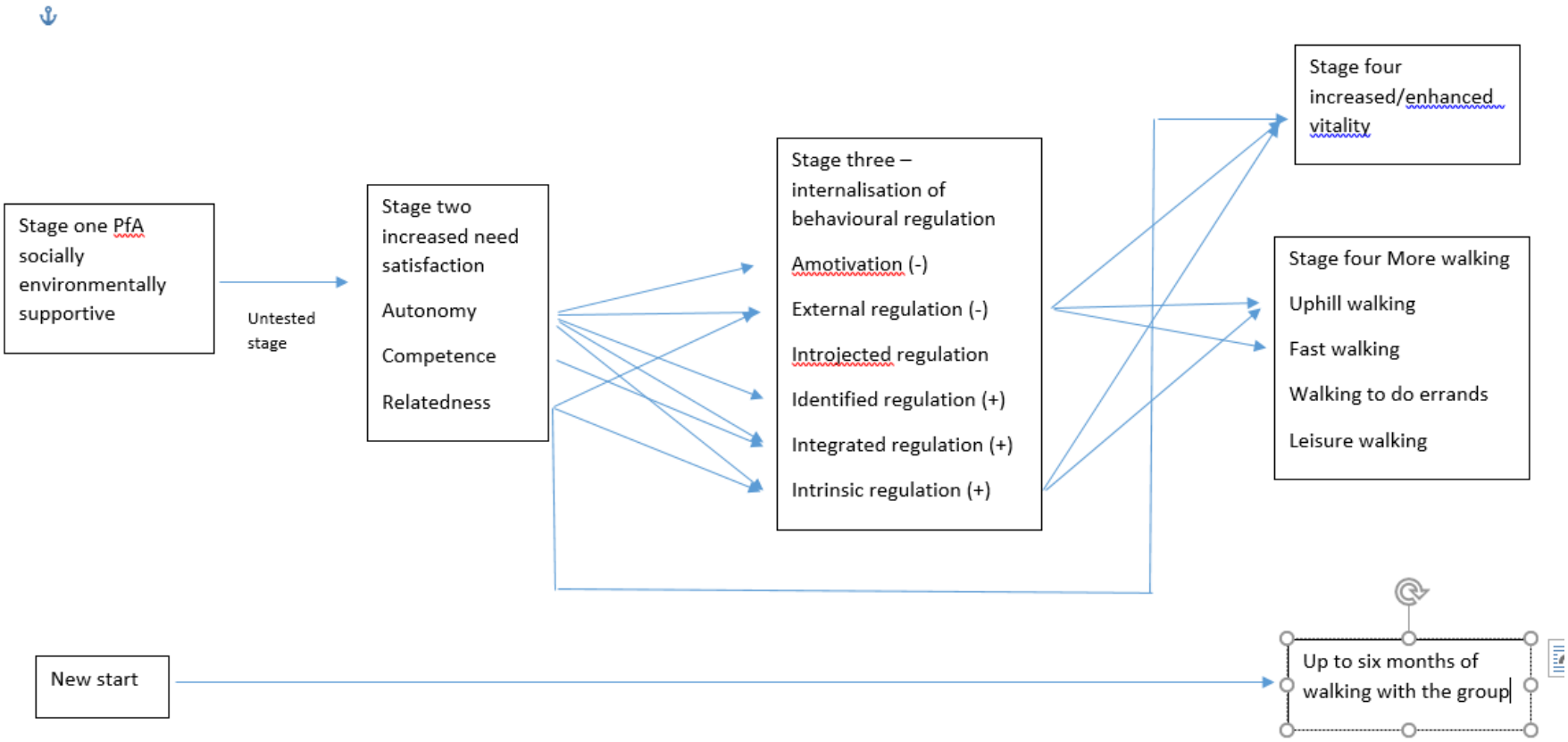
3.4.1. Overview of the main findings

In relation to question one, the WE:ROAM study did not find any meaningful or significant changes in need satisfaction, behavioural regulations, or vitality between time point one and time point two. Reasons for this are discussed in more detail below, but in short, participants may have joined the group with an already high motivational profile, satisfaction of needs and high vitality. Alternatively, the anticipated changes may have already taken place prior to data collection at time point one, with the average time walking at the time of data collection for time point one being 2.74 months. As such, the PfA walking environment may have already provided a needs supportive environment triggering need satisfaction, adaptive behavioural regulation and high vitality. In relation to walking outcomes, there was one change of significance within the walking outcomes,

where participants were less likely to walk for more than an hour at continuation. As there were no changes of significance within the walking behaviours, with the exception of leisure walking, this suggests that participants were walking about the same in other types of walking, but less for leisure at continuation. With no changes of significance to other variables, it is not surprising that walking behaviour, apart from leisure walking did not change. Participants may have been doing other forms of PA such as swimming and keep fit classes.

As all but one variable recorded no change between time points, research question two to examine the relationships between changes in variables became redundant. Instead, in order to further understanding of the SDT pathway to behaviour change within the context of PfA walking groups, question three examined the cross-sectional relationships between the SDT variables and walking behaviour. The findings are discussed in more detail below, but in summary, the cross-sectional findings indicated some significant relationships between SDT variables and walking outcomes to partially support the SDT behaviour change pathway. These findings are illustrated in figure 13 below. Taking each stage observed at a time, figure 13 identifies from stage two to stage three, there is an adaptive relationship between need satisfaction behavioural regulations. From stage two to stage four, there is also an adaptive relationship between need satisfaction and vitality. From stage three to stage four, there is an adaptive relationship between behavioural regulation and vitality. Also from stage three to stage four there were differences in those who walked for more than one hour and less than one hour and behavioural regulation. Those who walked uphill for more than an hour had greater intrinsic motivation, and those who walked for less than an hour uphill or fast were more likely to experience external regulation.

Figure 13: SDT WE:ROAM behaviour change pathway within the initiation phase. Behavioural regulation have a (+) or (-) indicating the positive or negative correlations to other variables



3.4.2. RQ1 changes in SDT variables from initiation to continuation

The WE:ROAM study was set up to test the SDT behavioural change pathway between two time points as illustrated in figure 5. In particular, the focus of the WE:ROAM study was the purported changes and relationships between stages two and four inclusively of the behaviour change pathway. Despite anticipating the purported changes, only one change of significance occurred, which resulted in a negative change of significance in walking for leisure between initiation and continuation. These findings showing minimal changes are unexpected and can be interpreted two ways. Firstly, it may be that there were no changes in motivational variables during the period of starting and continuing to participate in group walking. This may suggest that participants joined the group with a profile that suggests they are already motivated and needs are being met. Specifically, there were many high mean scores recorded for need satisfaction, adaptive behavioural regulation and vitality at the first time point. For example, out of a total possible score of 5, identified regulation scored 4.38, integrated regulation scored 3.87 and intrinsic motivation scored 4.63. Similarly, the more controlling forms of behavioural regulation had anticipated lower scores. For example, amotivation scored 1.16 and external regulation scored 1.61 out of 5. It was a similar story for need satisfaction. For example 4.46 for autonomy, 4.51 for relatedness need satisfaction out of a possible 5. Likewise, the vitality mean score at initiation was also high at 5.73 out of a possible 6.

Consideration of baseline scores in other studies may provide some insight for example, in the Niven & Markland study (2015) autonomous motivation at baseline was lower than the WE:ROAM study, potentially supporting the suggestion that participants in WE:ROAM had already moved from baseline levels. An alternative explanation is that motivational profiles did change, but these may have occurred prior to the first data collection period. Specifically, at the first time point for data collection, there was a mean average of 2.73 months of time spent already walking with the group by participants who subsequently continued. It may be that the nature of the PfA environments mean that participants quickly feel supported and develop adaptive behavioural regulations. Further research is needed to capture true baseline data as participants join the group.

Some of the PA literature does support the potential of early changes within the SDT behaviour change framework (Wasserkampf & Kleinert, 2016). According to Wasserkampf et al. (2016), changes to autonomous regulation are observable within the first weeks of initiation. Other SDT research has concurred with this suggestion, recognising identified and integrated regulation develops quicker than intrinsic motivation, but changes can take place within the first eight weeks, including to intrinsic motivation (Rodgers et al., 2010). Both Wasserkampf et al. (2016) and Rodgers et al. (2010) recognise that there is ambiguity over the finite periods of change in behavioural regulation and further research is required to explore this in detail. Wasserkampf et al. (2016) collected data at baseline, three months and up to six months, all of which would have fallen within the WE:ROAM initiation period. It is also important to acknowledge that in the WE:ROAM study, these adaptive levels of behavioural regulation, high need satisfaction and vitality levels are maintained at the second time point.

This suggests that the SDT behaviour change pathway sequence observed at time point one for WE:ROAM is still being observed at time point two, and conditions at walking groups may be favourable for inducing high levels of need satisfaction, adaptive behavioural regulation and high vitality. If participants are joining with robust levels of need satisfaction, behavioural regulation and vitality, then it could be suggested that such participants are perhaps not the most needy, at risk groups, and this is a problem already identified within the walking literature as an issue (Ball et al., 2017; Foster et al., 2011; Kwak, Kremers, Walsh, & Brug, 2006). High numbers of participants may not be the best measure of success because those most at risk of inactivity within the population are still not being reached (Ball et al., 2017; Kwak et al., 2006). The Foster et al. systematic review (2011) into recruiting for walking interventions identified that walking groups are successful at recruiting white middle class women. Although the WE:ROAM study did recruit more women than men, social economic status and ethnicity were not measured. As older women are an at risk group, this also needs to be taken into account. Similarly, social health is also an important factor, so even if those who are joining are already physically and mentally fitter, their social health may well benefit from walking with groups.

In relation to walking outcomes, within walking SDT literature there is evidence to show that increases in need satisfaction and adaptive behavioural regulations leads to increased

walking (Donnachie et al., 2017; Niven & Markland, 2015; Van Hoecke et al., 2014). However, the limited changes in walking within the WE:ROAM study are not in fact surprising given the limited changes in need satisfaction and adaptive behavioural regulation, as discussed above. The reduction in walking for leisure may be more difficult to explain but may be due to limitations in the CHAMPS instrument. The other possibility is that walking for leisure was replaced by other forms of leisure activity such as keep fit classes or swimming (Stephan et al., 2010).

3.4.3. RQ2 What are the relationships between changes in variables from initiation to continuation for need satisfaction and behavioural regulation; need satisfaction and vitality; behavioural regulation and vitality; need satisfaction and changes in walking; behavioural regulation and changes in walking; and vitality and changes in walking?

Due to the fact there were no significant changes in the WE:ROAM study variables between time point one (initiation) and time point two (continuation) of walking in groups, the rationale for examining the relationship between changes to these variables became redundant. Instead, the relationships between variables were examined at one time point only, the initiation phase detailed below.

3.4.4. RQ3 What are the cross-sectional relationships at initiation between need satisfaction for autonomy, competence and relatedness and behavioural regulations; need satisfaction and vitality; behavioural regulations and vitality; need satisfaction and walking; behavioural regulations and walking; vitality and walking?

3.4.4.1. Relationship between need satisfaction and behavioural regulations

The WE:ROAM study identified significant relationships between need satisfaction and the internalisation of behavioural regulations in keeping with the SDT behaviour change pathway (stage two to three) as depicted in figure 5. For example, automomy was significantly related to five of the six behavioural regulations ranging from small to large, and always in the anticipated direction. These findings indicate experiencing high levels of

autonomy, as a sense of control and personal choice, is related to more self-determined and higher quality forms of motivation which are likely to be sustaining. Such findings are supported in the SDT walking literature where need satisfaction was more positively associated with more autonomous forms of motivation (Donnachie et al., 2017; Niven & Markland, 2015). It is good to see that older adults in walking groups experience levels of autonomy, and these are related to adaptive forms of motivation. This sense of autonomy is especially important to older adults because it facilitates the maintenance of independence and self-reliance (Solberg et al., 2013). Many older adults fear reliance on family and health professionals, so are especially appreciative of autonomy supporting environments that facilitate behavioural regulation and need satisfaction (Solberg et al., 2012)

In contrast to autonomy, relatedness need satisfaction was only significantly positively related to intrinsic motivation and negatively correlated with external regulation (small to medium). These findings suggest that relatedness, which is experienced as a connection to and acceptance by others, may have a role to play in influencing adaptive behavioural regulations, which is likely to be sustaining. This finding is consistent with other literature examining the relationship between relatedness. The importance of being around important others, both as sharing and caring for each other and viewing others as role models help to instil a sense of ownership for activity, expressed as more autonomous motivation (Springer, Lamborn, & Pollard, 2013). Similarly, need support from coaches (relatedness need support) within the Van Hoecke et al. study (2014) was positively linked to autonomous motivation. Relatedness need satisfaction and resulting intrinsic motivation could result from supportive actions by instructors and important others taking part in the activity (Ryan et al., 2009), and highlights the importance of this aspect of group led walks for older adults.

In relation to the need of competence, there was only one significant medium positive relationship with integrated regulation, and small non-significant relationships with all of the other behavioural regulations. This finding suggests that competence need satisfaction, which is characterised by a sense of confidence and feelings around mastery, corresponds with the integration of a valued activity, such as group walking, into participants' personal set of values. Within the SDT literature, Wilson et al. (2008) identifies the negative impact

controlling forms of motivation such as external regulation have on self-worth and self-belief. In contrast, more autonomous regulation, such as integrated, are linked to sustained behaviour as the behaviour becomes more attached to the self, and the causality shifts from external to more internalised.

Within the WE:ROAM study, the high sense of confidence and of self-mastery in group walking could have triggered a sense of belief in walking, integrating the activity into participant personal values. Part of this may relate to the recognised physical and mental health benefits of walking, and the value of this activity to preventing illness, injury and the relieving of health conditions. Competence in SDT posits that people who experience both integrated forms of regulation are likely to also experience competence and autonomy. This is supported within the SDT PA literature, where researchers have identified that valuing the benefits of PA/exercise enhances need satisfaction (Edmunds et al., 2007). According to Edmunds (2007), although the activity may not be enjoyed for its purpose, recognising the benefits to health both physical and mental has a positive impact on need satisfaction.

Integrated regulation is recognised with the SDT literature as an important form of motivational regulation (Wilson et al., 2008). According to Wilson et al. (2008), perceived autonomy was an important predictor of integrated regulation, highlighting the link between need satisfaction and the internalisation of regulation, leading to ongoing exercise behaviour. In line with findings from Wilson et al. (2008), Teixeira et al. (2012) and Wasserkampf et al. (2016), integrated regulation is under measured and is worthy of further exploration. For example, one study of 1092 adults' participation in PA identified that integrated regulation provide the strongest prediction for PA retention and behaviour (Miquelon, Chamberland, & Castonguay, 2017). Miquelon et al. (2017) reported that PA participation was maintained by participants due to the development of the sense of self and the activity. Intrinsic motivation was also important to participation, but the integration into the sense of self was more strongly linked to maintenance.

3.4.4.2. Relationship between need satisfaction and vitality

Within the WE:ROAM study during the initiation phase, there was a positive correlation between relatedness and vitality. This finding suggests that those WE:ROAM walkers who

experienced greater feelings of being valued and supported by important others (relatedness) were more likely to have a greater sense of vitality, which is experienced as a positive feeling of aliveness and enhanced energy, including feelings of enthusiasm and spirit (Ryan & Frederick, 1997). The ability to be amongst important others in an environment like group walking is especially important to vitality because vitality can be boosted by a sense of relatedness, when it is threatened by and susceptible to other factors, such as ill-health or the flare up of a chronic health conditions (Ryan & Frederick, 1997). Older adults especially recognise the importance of attending the social aspects of group walking, even when they are physically unable due to illness or injury to take part in the walking itself (Grant et al., 2017b). Supportive of this relationship, within the SDT PA literature, the Solberg et al. study (2013) identified that satisfaction of relatedness (and autonomy) in daily life in a nursing home were positively related to well-being and vitality. Together, these support the importance of group walks in providing opportunity for relatedness to potentially enhance walkers' vitality.

3.4.4.3. Relationship between behavioural regulation and vitality

Within the WE:ROAM study there was a positive significant relationship between intrinsic motivation and vitality and a negative significant relationship between external motivation and vitality during the initiation phase of walking. These findings support the internalisation of behavioural regulations resulting in increased or enhanced vitality. As such, these findings indicate that participants with high levels of intrinsic motivation experienced vitality and those experiencing external forms of motivation were likely to have diminished or low levels of vitality. When physical activity, such as walking, is experienced as a controlling form of motivation, this is much more likely to have a negative impact on vitality levels. In contrast, experiencing physical activity as enjoyable and inherent to personal values is more likely to have a positive impact on vitality (Ryan & Frederick, 1997).

Within the SDT walking literature, Donnachie et al. (2017) reported that participants who felt controlled by pedometers reported lower energy levels, whilst those who were inspired by the amount of walking recorded by the pedometer, reported lifted spirits and feelings of success. Other SDT research has highlighted positive associations between intrinsic motivation and vitality (Nix et al., 1999). This study concluded that motivations that are experienced as intrinsic by participants will not experience their efforts as draining

(Nix et al., 1999). Solburg et al. (2013) also reported that autonomous regulations were positively linked to changes in vitality. Therefore, the positive relationship between intrinsic motivation experienced by WE:ROAM and vitality could suggest that WE:ROAM participants who experienced a sense of intrinsic motivation walking with the group also enjoyed higher levels of motivation and together this combination is linked within the SDT literature to maintenance (Ryan et al., 2008; Ryan et al., 2009)

3.4.4.4. Relationship between need satisfaction and walking behaviour

The SDT behaviour change pathway purports that increased need satisfaction results in more walking. However, the WE:ROAM study found no difference in autonomy, competence or relatedness need satisfaction between groups defined by their walking behaviour. As detailed in 4.3, there is evidence that need satisfaction in other studies is related to enhanced and increased walking (Niven & Markland, 2015; Van Hoecke et al., 2014). It is possible that our measure of walking using the CHAMPS tool did not allow for a sufficiently sensitive measure of walking behaviour to identify this association, or it may be that in this sample, walking was determined by factors other than need satisfaction.

3.4.4.5. Relationship between walking behaviour and behavioural regulation

Participants of the WE:ROAM study who walked fast for less than an hour, experienced higher levels of controlling forms of motivation than those who walked for more than an hour. Participants who walked uphill for more than an hour also experienced higher intrinsic motivation. As such, it was participants who enjoyed the experience of walking uphill, who were more likely to do so. Similarly, those who felt compelled to walk fast for external reasons, such as 'I know I should' or 'my doctor says I should' were less likely to do so (Adie et al., 2008; Ryan et al., 2009). The Texeira et al. systematic review on exercise, physical activity, and self-determination theory (2012) supported a positive relationship between more autonomous forms of motivation and exercise, and intrinsic motivation was highlighted as being more predictive of long term adherence. According to Ryan et al. (2009), a key SDT hypothesis identifies that physical activity that is intrinsically motivated is more easily maintained over time. Within the SDT walking literature, there is much support for the link between intrinsic motivation and walking. Niven & Markland (2015), Donnachie et al. (2016), Lim & Rhodes (2016), Kinnafick et al. (2014) and Van Hoecke et al. (2014) all

reported that intrinsic motivation was positively related to walking levels so what. Therefore, it is important for group walk leaders and coordinators to focus on emphasising internal forms of motivation, rather than external forms, especially when more demanding types of walking are potentially within the walking schedule.

3.4.4.6 Relationships between vitality and walking

The WE:ROAM study reported no difference in vitality between groups defined by their walking behaviour. This finding does not support the SDT behaviour change pathway which purports that enhanced vitality results in corresponding enhanced or increased physical activity. This finding could indicate that participant vitality levels were enhanced by factors other than walking such as positive correlations between intrinsic motivation and vitality. Vitality is also recognised as being particularly fragile, and is sensitive to both physical and mental good health positively and poor physical and mental health negatively (Nix et al., 1999; Ryan & Frederick, 1997).

3.5 Strengths of the WE:ROAM study

The WE:ROAM study was designed as a longitudinal study in order to collect identical data from the same group of people at two separate time points. This longitudinal study design supports the observation and recording of changes in the data between the time points, which could indicate causal factors associated with the changes, had changes taken place. The four questionnaires used for data collection had also been validated for use prior to selection. The BRWS and the PNSWS had been specifically adapted and validated for walking in 2015 (Niven & Markland, 2015). The recruitment process and outcome were also successful aspects of the WE:ROAM study. The recruitment process was tested in a pilot study involving feedback from 29 participants. The feedback from the pilot study identified that participants were tolerant to answering four combined questionnaires, especially over the telephone. The telephone contact between the lead researcher and participants was also a strength because it reduced the burden of completion for the participant, and also allowed the development of rapport. Participants seemed to enjoy chatting about their walking and walking group experiences during the completion process. This rapport may have induced participants to continue taking part in the study. The recruitment process, which accepted any participants aged 65 or over throughout Scotland who volunteered to take part at random, was not subject to selection bias. Post cards and leaflets advertising

the study were handed out to new starts and those participants who were within 6 months of joining , by walk leaders and coordinators. The recruitment process also had a retention rate of over 80% which confirmed the recruitment process had been successful.

3.6. Limitations of the WE:ROAM study

The SDT behaviour change pathway has 4 distinct stages, and the WE:ROAM study measured stages two to four inclusive. There was no measurement from stage one to two. Unfortunately, there was a problem with the scoring of the Health Care Climate Questionnaire adopted to measure this stage of the pathway. A decision within the supervisory team was reached to disregard this questionnaire, so the first stage was not measured. Similarly, the CHAMPS questionnaire, adopted to measure walking, proved to be difficult to analyse. The questionnaire had been validated for use, and also recommended in a systematic review of measuring instruments for older adults because it measured intensity as well as differing types of walking. However, the analysis of the measurement, which incorporated five durations of walking per walking type tested the memory recall of participants, and proved problematic to interpret. Another limitation of the study related to the amount of time participants had been walking prior to data completion at the first time point. On average, participants of the study had been walking with the group for 2.7 months before data collection for the initiation phase. It would possibly appear that many of the anticipated changes expected between time points had in fact already taken place prior to the second measurement.

Finally, the numbers recruited for the study were disappointingly low. Although the WE:ROAM study recruited 61 participants during the initiation phase, only 49 completed data at continuation. Although this is a good retention rate, the relatively low initial recruits of 61 meant that any additional loss of numbers was problematic. However this is not unprecedented, the Kinnafick et al. (2013) SDT study recruited 69 which is similar to the WE:ROAM initiation recruitment. A more recent quantitative walking group study recruited 20 participants (Brett & Pires-Yfantouda, 2017).

3.7 Practical implications of the findings/future research directions

It would be useful to capture a baseline measurement for older adults joining walking groups. From a recruitment perspective, this could prove challenging as it is difficult to foresee where and precisely when new starts arrive in groups throughout the country. Data capture at the launch of new groups could overcome such problems. Similarly, it would be helpful to use a more robust measuring instrument to record walking data that is easier to analyse and does not depend so heavily on memory recall. The adoption of more objective measurement, such as accelerometry would be an ideal way to capture walking data, although this may have implications for recruiting in high enough numbers. In terms of implications for practice, it will be important to relate the findings from WE:ROAM to PfA. The focus of the feedback should highlight the link between need satisfaction and adaptive motivation, the link between vitality and adaptive motivation and the link between adaptive motivation and certain types of walking. In terms of need satisfaction, participants who experience autonomy have low levels of controlling forms of motivation and higher forms of more self-determined motivation. Similarly, feelings of relatedness are linked to higher vitality levels. As such, it will be helpful for PfA to understand that walk leaders and corrdinators who can provide autonomy and relatedness supporting environments will encourage higher levels of need satisfaction and more self determined forms of motivation. Training group instructors in need supportive techniques can have positive effects to participant need satisfaction and more self-determined motivation (Edmunds et al., 2007; Hancox, Quested, Ntoumanis, & Thøgersen-Ntoumani, 2018; Hancox, Quested, Thøgersen-Ntoumani, & Ntoumanis, 2015; Lee et al., 2016). Furthermore, providing a relatedness supporting environment also has a positive impact on vitality, and more vigorous forms of walking.

4. Walking Experiences: Researching Older Adult Social Experiences – the WE:ROASE study

The WE:ROASE study is the third and final study within this PhD research project, and has a specific focus on social factors that influence older adult group walking behaviour at both initiation and continuation. The introduction to this chapter starts with an overview of the overall research project to date and sets the social context for focussing on social experiences in the WE:ROASE study. The background section then explores the social context, in particular the social environment context in more detail and concludes with a round-up of the research gaps relating to social environmental factors and the initiation and continuation of older adult group walking behaviour. Finally the aims and research questions for the WE:ROASE study are presented.

4.1. Overview of the WE:ROASE study in context with study one and study two

The WE:ROASE study was shaped by the principles of the ecological framework (Sallis et al., 2008). The ecological framework is one of the ecological models of health behaviour that emphasises individual, social, environmental and political influences on behaviour (Sallis et al., 2008). Study one, a systematic review exploring why older adults start and continue to walk in groups, produced findings relating to individual, social and environmental factors. The findings highlighted the importance of individual and social factors, and therefore study one focused on individual factors and study two on social factors. More specifically, study two, the WE:ROAM study, focused on the modifiable factor of motivation within the individual sphere of the framework. Its overall purpose was to identify and measure motivational factors at the initiation and continuation phases of walking, and to record potential changes in motivation between the two phases. In the third WE:ROASE study, the focus was on modifiable social factors contained within the social sphere of the framework. More specifically, the WE:ROASE study explored social environmental factors relating to the

initiation and continuation of older adult group walking, to identify if factors were the same or different per phase.

4.2. Background

Recent publications within the walking literature have identified significant gaps in policy and practice regarding social factors to support PA and promote behaviour change (Foster et al., 2018; Hunter et al., 2018). These findings are particularly noteworthy because the first systematic review of walking interventions recognised the importance of social factors, within an ecological framework perspective (Ogilvie et al., 2007). Despite the Ogilvie et al. (2007) early acknowledgement of the importance of social factors, walking experts have recently reported that social factors have been overlooked in favour of individual and environmental factors (Hunter et al., 2018). According to Hunter et al. (2018), social factors have suffered from a stepping stone effect, with a research focus on individual (micro level) factors, stepping over social factors (meso level), to focus on environmental ones (macro level). As a result, research into social factors has lagged behind (Hunter et al., 2018). Therefore, there now needs to be a greater research focus on social factors impacting PA behaviour. This need to have a greater focus on social factors is reinforced within the walking literature by the fact that social factors predict adherence (Ball et al., 2017; Kwak et al., 2006).

From an older adult perspective, it is particularly important to focus on social factors impacting PA behaviour because older adults are at greater risk of loneliness and isolation than any other age group (Shankar, McMunn, Banks, & Steptoe, 2011). The reasons why older adults are more prone to isolation and loneliness are linked to the increased likelihood of living alone; increased inactivity; illness; retirement; bereavement and loss of purpose and functional independence (Coyle, 2011; Reed, Crespo, Harvey, & Andersen, 2011; Shankar et al., 2011). Loneliness has been described as emotional isolation, with feelings of loss, or lack of companionship (Cattan, White, Bond, & Learmouth, 2005).

According to Cattan et al. (2005), older adults experience social isolation as the absence of interaction and contact between an older adult and social groups or networks. Coyle (2011)

goes on to suggest the consequence of such isolation is the loss of social contact, resulting in a lack of encouragement to maintain activities of daily living. It is more likely that people living alone will have smaller social networks and less frequent participation in social events because they cannot share those networks of other people within the household (Coyle, 2011). Specifically in relation to PA, health promotion professionals and social scientists have recognised the need to address the social challenge resulting from isolation and its link to inactivity (Cattan et al., 2005; Reed et al., 2011; Shankar et al., 2011). It is encouraging then that the social aspects of group walking, and being part of a group generally, have been identified as important factors for older adult PA (Ball et al., 2017; Cattan et al., 2005; Kwak et al., 2006). The Cattan et al. systematic review (2006) of successful PA interventions preventing isolation and loneliness among older adults identified ten effective interventions, nine of which were group based activities (Cattan et al., 2005). Therefore, it would be helpful for older adult walking research to identify specific social factors which support and encourage the initiation and continuation of walking opportunities.

4.2.1. Unpicking social terminology

With a recognised need to focus more on the social factors influencing walking behaviour (Foster et al., 2018; Hunter et al., 2018), a better understanding of what constitutes social factors would be helpful. There is a plethora of terms used relating to social factors within the PA and older adult literature. For example, social factors defined within the walking, PA and older adult literature include social networks, social norms and social support (Ball, 2006; Franco et al., 2015; Hunter et al., 2015). The literature also refers to socio cultural factors such as the social characteristics of communities and social connections, social identity, social isolation, neighbourhood social cohesion and friendships with others (Ball, 2006; Dunlop & Beauchamp, 2013; Franco et al., 2015; Hemingway & Jack, 2013; van Stralen et al., 2009).

The term social environmental factors is also frequently referred to in the PA literature, and could be a helpful catch all definition for the host of social factors together with environmental factors which impact social interaction (Foster et al., 2018; McNeill, Kreuter,

& Subramanian, 2006; Prins, Kamphuis, De Graaf, Oenema, & Lenthe, 2016). However, even within a catch all term like social environmental factors, there are still multiple definitions which require further unpicking (Hunter et al., 2018; McNeill et al., 2006). In fact, despite the extensive and wide ranging aspects which make up social factors and specifically social environmental factors, it is recognised that there is no consistency or agreed definition of the social environment (McNeill et al., 2006). For example, one definition of the social environment incorporates aspects of the social environment that either supports or thwarts social flourishing (McNeill et al., 2006). Prins et al. (2016) highlight the importance of social support and neighbourhood capital as key components of the social environment. The social environment is also referred to as the opportunity to be with company, but also including situations to enjoy sharing satisfying experiences with others (Thogersen-Ntoumani et al., 2017). It is therefore unsurprising that what is exactly meant by social environmental factors may vary between researchers.

The level of ambiguity about what is meant by the social environment is also reflected within the representation and placement of the social environment within ecological frameworks (Bauman et al., 2012; Sallis & Owen, 1999) . For example, according to Sallis and Owen (1999), the ecological model of influences on physical activity firmly places social environmental factors within the social sphere. However, in contrast, Bauman et al. (2012) place the social environment firmly within the environmental sphere, where a distinction is drawn between social environmental factors and physical environmental factors under the umbrella of the environmental context.

In an attempt to achieve clarity, McNeill et al. (2006) undertook a review of the concepts and evidence of the reporting of the social environment and physical activity. Although the McNeill et al. (2006) review took place nearly twenty years ago, its findings are still relevant today. The review identified a framework, incorporating five social environmental dimensions. Table 11 below depicts these five dimensions and includes supporting definitions. McNeill et al. (2006) acknowledged that all reported dimensions are not exhaustive. In addition, McNeill et al. (2006) recognised there is a great deal of overlap between dimensions as described in the table below. In the context of the current series of studies within this thesis, three of the five dimensions were particularly relevant to the

findings of study one, the systematic review of why older adults start and continue to walk in organised groups. These were: social support and social networks, neighbourhood and community characteristics; and social cohesion and social capital.

These three key dimensions are therefore explored in more detail below as they are depicted within the older adult walking literature, with a focus on initiation and continuation. This exploration of the older adult walking literature in a social environmental context will attempt to cut through some of the ambiguity surrounding the terminology used to describe social environmental factors impacting older adult walking. The specific focus on social support/networks; neighbourhood/community settings; and social cohesion/capital will bring with it a necessary clarity and focus in depicting relevant social environmental factors for this age group and walking.

Table 11 Five dimensions depicting the social environment adapted from McNeill et al. (2006)

Dimension of the social environment	*Definition*	*Key elements*
1.Social support 1a. Social networks 1b. (Social networks 1b. is joined together with Social capital 3b. for analysis)	Social support = resources provided by other persons such as family, peers and practitioners Social network = collective structure of relationships that embrace the individual	Social support incorporates encouragement, buddying Social networks groups and clubs available to individuals within neighbourhoods, work or school contexts and communities (social capital

(explored in more detail below)		similar to social networks and are joined together)
2.Neighbourhood and Community characteristics (explored in more detail below)	Neighbourhood and community factors = relating to the characteristics of the place and environment where people live	The quantity and quality of social experiences within the community and neighbourhood of residence which support or thwart social encounters
3. Social cohesion 3a. Social capital 3b. Social capital 3b. is added to Social networks 1b. for further analysis (explored in more detail below)	Social cohesion = the sense and degree of connectedness between groups and individuals in society Social capital = resources available to individuals and groups often depicted by social groups with shared norms - and can relate to a measure of strength of social cohesion	Social cohesion is depicted by the level and extent of shared beliefs and practices including a willingness to support the common good Social capital and social networks are closely linked and overlap (see dimension 1b. within this table) with aspects of shared trust within groups that leads to a desire to achieve/ experience shared goals

4.Socio economic position and income inequality	SES = social standing within the community often measured by income, education and occupation. Income inequality = the unequal distribution of wealth within society	Individuals who benefit from high levels of income and social standing are more likely to engage in healthy behaviours
5.Racial discrimination	Interpersonal and institutional bias that results in reduced advancement opportunities	Experience of racial discrimination can result in poorer health outcomes such as emotional distress, poor mental health and physical states

4.2.2. The social environmental factors of walking and how they relate to older adults and the initiation and continuation of behaviour

The three dimensions identified by McNeill et al. (2006) as key aspects of the social environment are discussed below in relation to older adults in a walking context. Prior to that, a brief overview of how social factors generally have been reported in relation to walking, older adults and initiation and continuation is set out immediately below.

4.2.2.1. Social factors and walking

The link between social factors and participation have been established within the PA literature, but also specifically within the walking literature (Ball et al., 2017; Brett & Pires-Yfantouda, 2017; Jancey et al., 2008; Kassavou et al., 2015; Pelssers et al., 2013). However, despite an understanding that much of societal walking for transport, exercise or pleasure is rooted in social settings, interventions to promote walking behaviour need to do more to take social norms into account (Hunter et al., 2018). If social factors are important for the

initiation and maintenance of PA (Franco et al., 2015; van Stralen et al., 2009), then walking has been described as an ideal mode of PA to facilitate social interaction (Grant et al., 2017a; Pelssers et al., 2013). Walking, even at a moderate pace, should enable most walkers to undertake conversations, making it an inherently social activity (Pelssers et al., 2013). In order to fully explore the social nature of walking, three dimensions within the McNeill et al (2006) framework are used to structure this discussion.

4.2.2.2. Walking and social support

According to McNeill et al. (2006), key elements of social support and social networks include the presence and nature of interpersonal relationships and resources provided by others. Walking in groups provides the opportunity for participants to talk and walk, thus providing the opportunity to benefit and enjoy social contact and friendships, plus socially supportive relationships with fellow walkers, walk leaders and family or friends (Brett & Pires-Yfantouda, 2017; Pelssers et al., 2013; Thogersen-Ntoumani et al., 2017).

4.2.2.3. Social support for older adults within a walking context – McNeill et al. (2006) dimension 1a

4.2.2.3.1 Social support – the importance of social contact and friendship

Many older adults are at a transitional phase of life where they are no longer working, and may be experiencing the loss of a life partner, family or long term friends (Capalb et al., 2012; Duncan et al., 1995b; Grant et al., 2017b). This loss of social opportunity can have a significant bearing on undertaking physical activity (Capalb et al., 2012; Duncan et al., 1995b; Pelssers et al., 2013). Group activities, such as walking groups, can provide the opportunity for new and developing friendships, especially where the social contact, such as post walk refreshments, are emphasised (Dattilo, Martire, Gottschall, & Weybright, 2013; Jancey et al., 2008; Thogersen-Ntoumani et al., 2017). In some cases, the search for new friendships is linked to the loss of other friends and family (Duncan, Travis, & McAuley, 1995a; Grant et al., 2017b). Therefore, some older adults thrive within a group of friendly people. (Dattilo et al., 2013; Grant et al., 2017b).

In relation to initiation and continuation of group walking, social contact and the desire to avoid social isolation is a trigger point for older adults starting to walk with a group (Capalb et al., 2012; Ingram, Ruiz, Mayorga, & Rosales, 2009; Lee, Avis, & Arthur, 2007). In relation to continuation of walking, the development of friendship within the group is linked to this phase (Capalb et al., 2012). The importance of social contact and relatedness to others were also identified as important to continuation (Duncan et al., 1995a; Pelssers et al., 2013), whilst the lack of social contact has also been identified in some studies as a reason for not continuing (Lee et al., 2007; Normansell et al., 2014).

4.2.2.3.2. Support from fellow walkers/peers

Some older adult walking participants especially value the rapport with, and support from, fellow walkers with similar interests, backgrounds and locality. (Ingram et al., 2009; Leung et al., 2014; Thogersen-Ntoumani et al., 2017) . As such, older participants appeared to experience more enjoyment because they walked with people from similar backgrounds or shared experiences, and could meet regularly to share social experiences together (Donovan & Kennedy, 2015; Ingram et al., 2009; Jancey et al., 2008). For some participants, there is a strong feeling that there is no-one more likely to better understand them or their issues than those who directly experience the same situations (Donovan & Kennedy, 2015; Ingram et al., 2009; Normansell et al., 2014). As a result, many friendships blossomed and extended beyond the walking groups (Duncan et al., 1995a; Lee et al., 2017).

Some older walkers also recognise that they are better in a group as they do not enjoy walking alone (Normansell et al., 2014; Thogersen-Ntoumani et al., 2017). They need the support of others in a group environment to help them avoid dropping out (Donovan & Kennedy, 2015; Normansell et al., 2014). Some participants actively sought companions to walk with, and found sharing experiences during walking enhanced rapport and shared company (Nies & Motyka, 2006; Normansell et al., 2014; Thorup et al., 2016). Another important aspect of fellow walker social support is a sense of commitment and accountability to the group and each other (Ingram et al., 2009; Thogersen-Ntoumani et al., 2017). That sense of commitment and accountability worked in both directions: from individual walkers to the rest of the group and also from the group to individual walkers if they stopped attending. (Grant et al., 2017a; Ingram et al., 2009)

In relation to initiation and continuation, Capalb et al. (2013) have identified that being able to talk to peers was a reason for initiation, whilst social support has been identified as positively associated with maintenance at both two and six months post intervention (Takeda, Oka, Sakai, Itakura, & Nakamura, 2011). Similarly, peer support and watching peers successfully achieve the walking programme were cited as reasons for maintenance (Lee et al., 2007; Lee et al., 2016; Normansell et al., 2014).

4.2.2.3.3. Support from friends and family

Older adults have identified that a range of people play important roles in becoming and staying involved in walking, with support from family a particularly important reason (Coghill & Cooper, 2009; Thorup et al., 2016). Family support was in some cases linked to friendly competition between family members, especially partners or spouses (nguyen et al., 2005; Thorup et al., 2016). Many older adults refer specifically to the help from friends or family members to provide 'buddy support' to walk with them on a regular basis (Coghill & Cooper, 2009; Nies & Motyka, 2006). In relation to initiation and continuation, the support and opportunity to walk with friends and family helped with adherence (nguyen et al., 2005; Nies & Motyka, 2006). Walking with friends was a reason for continuation for both Nies et al. (2006) and nguyen et al. (2005) and Leung et al. (2017). The support from family members was often quoted as the reason for starting to walk with groups (Coghill & Cooper, 2009; nguyen et al., 2005).

4.2.2.3.4. Walk leaders/Health professionals

Support from important others was also highlighted as especially helpful for older adults. For example, walk leader or coordinator support was identified as important to participation (Jancey et al., 2008; Kwak et al., 2006; Leung et al., 2014; Thorup et al., 2016). In addition, health professionals, especially where walkers had or were experiencing health conditions, were also identified as a key area of support (Jancey et al., 2008; Thogersen-Ntoumani et al., 2017; Thorup et al., 2016). From a safety perspective, support relating to advice and guidance around their health condition was especially appreciated (Thogersen-Ntoumani et al., 2017; Thorup et al., 2016). In some instances, health professionals

provided a friendly form of surveillance for walkers to oversee their walking progress (Thorup et al., 2016).

In relation to initiation and continuation, the regular contact with walkers by leaders or coordinators offering encouragement and support really helped ongoing participation (Coghill & Cooper, 2009; Thorup et al., 2016; Tsang et al., 2015). Similarly, enhanced support provided by walk leaders was in-built to some programmes because it is linked with maintenance (Jancey et al., 2008). The support provided by walk leaders in the form of organising outings and taking responsibility for safety is also linked to ongoing attendance (Grant et al., 2017a; Jancey et al., 2008; Thogersen-Ntoumani et al., 2017). Encouragement from health professionals was also cited as reasons for becoming involved (Duncan et al., 1995a; Nies & Motyka, 2006; Thorup et al., 2016)

4.2.2.4. Social networks/social capital for older adults and walking – McNeill et al. (2006) dimension 1b)

Due to the similarity between social networks and social capital (McNeill 2006), these will be addressed together within the social networks heading. Social networks are defined by McNeill et al. (2006) as a collective structure of relationships that embrace the individual. Key elements of social networks include social groups, or clubs often found within neighbourhoods and communities. According to Hunter et al. (2018), walking is significantly influenced by social networks around individuals yet not enough interventions make use of or tap into those networks. However, there are some walking studies that actively focus on existing social networks such as work based walking or are based around a favourite sports club (Brett & Pires-Yfantouda, 2017; Donnachie et al., 2017). In relation to older adults and initiation and continuation, research has identified a link between attending a walking intervention within the local community, the extension of social networks, and ongoing participation (Grant et al., 2017a; Lee et al., 2016; Taylor et al., 2003) . Similarly, within such shared social networks, smaller sub-sets of networks can be established, sometimes based on level of mobility and fitness, leading to ongoing participation (Leung et al., 2014). Other walking programmes result in additional social networks blossoming from the original walking club, boosting ongoing participation (Duncan et al., 1995b; Grant et al., 2017a).

4.2.2.5. Neighbourhood and community characteristics for older adults and walking – McNeill et al (2006) dimension 2

For many older adults, the local walking vicinity, community and neighbourhood are important to participation in walking (Jancey et al., 2008; Lee et al., 2017; Thogersen-Ntoumani et al., 2017). Being able to meet locally with people in the neighbourhood encourages some walkers to attend walking groups (Capalb et al., 2012; Grant et al., 2017b; Leung et al., 2014), and extends the possibility of befriending people in the local community (Jancey et al., 2008; Taylor et al., 2003). The accessibility and safety of neighbourhood was also an important factor to some walkers (Grant et al., 2017a; Jancey et al., 2008). For some older adult walkers, the social environment of the walking group provides companions, whilst also considering the walkability and personal safety of the route or location for all abilities (Dattilo et al., 2013; Duncan et al., 1995b; Van Hoecke et al., 2014). In relation to health and cultural issues, some walks were deliberately situated within the immediate local vicinity, or sometimes ventured further afield to avoid cultural discrimination (against women) locally (Grant et al., 2017a; Ingram et al., 2009). For residents of retirement homes, walking settings within the grounds, and sometimes within the corridors enhanced the opportunities for all levels of fitness or frailty to be accommodated (Taylor et al., 2003; Thogersen-Ntoumani et al., 2017).

In terms of initiation and continuation, the option to walk locally enhanced maintenance as this could at times keep costs down and enabled greater opportunity to take part in their preferred mode of PA, with limited travel required (Grant et al., 2017a; Jancey et al., 2008). The togetherness borne from walking with people within the community also enhanced maintenance because friendships with neighbours blossomed or were enhanced, with deeper connections established (Grant et al., 2017b; Lee et al., 2007; Leung et al., 2014) This is supported in some of the older adult PA literature where the community, often built around shared culture, shared religion, shared language and sometimes shared gender helped to maintain participation (Chiang, Seman, Belza, & Tsai, 2008; Dunlop & Beauchamp, 2013; Wilbur et al., 2006).

4.2.2.6. Social cohesion for older adults and walking – McNeill et al. dimension 3

According to McNeil et al. (2006), social cohesion relates to a sense and degree of connectedness between individuals and groups. Social cohesion is explained as the level and extent of shared beliefs and practices, especially for the common good. Within the walking literature, researchers have identified that walking group environments facilitate the development of social cohesion (Ball et al., 2017; Kwak et al., 2006; South et al., 2017). The format and scheduling of regular weekly meet ups, often at the same time and day, enables walkers to dedicate that time to the group. (Brett & Pires-Yfantouda, 2017; Grant et al., 2017a). This is especially relevant for older adults who may have more recreational time and are often looking to commit to activities and commitments post retirement (Duncan et al., 1995b; Jancey et al., 2008; Thogersen-Ntoumani et al., 2017). Attachment to the group can also be expressed with the use of special names, branding the group with an identity (Duncan et al., 1995b). Such team creation and team identity were also present in alternative older adult PA initiatives (Dunlop & Beauchamp, 2013) and also walking initiatives for differing age groups (Brett & Pires-Yfantouda, 2017).

A shared bond between older adult walkers and their walk leaders was often a consequence of shared background, age and experience (Grant et al., 2017a; Ingram et al., 2009; Leung et al., 2014). This sense of a shared bond and identity due to background, age and culture was also evidenced between participants (Ingram et al., 2009; Normansell et al., 2014). For some walkers, this shared experience was expressed as travelling with someone through their lives, which brought a sense of restoration and therapy (Grant et al., 2017b). This shared bond and connectedness was particularly apparent for groups who shared health issues (Green & Miyahara, 2007; Ingram et al., 2009).

In relation to initiation and continuation of walking for social cohesion reasons, the proactive desire for a connection to others was a reason to join groups (Capalb et al., 2012; Ingram et al., 2009). In the Ingram study (2008), participants signed a commitment form during registration, indicating their planned level of commitment to the group. The importance of an ongoing commitment to the group, facilitated by a sense of belonging, was recognised as important to maintenance (Capalb et al., 2012; Donovan & Kennedy,

2015; Leung et al., 2014). As such, the importance of meeting points prior to walks for meet and greet opportunities and refreshment breaks were also identified as important facilitators of connectedness (Grant et al., 2017a; Jancey et al., 2008; Thogersen-Ntoumani et al., 2017). In some instances, the absence of a group environment, which would provide an important sense of connection and togetherness, were cited as significant barriers to continuing (Nies & Motyka, 2006; Normansell et al., 2014; Taylor et al., 2003).

For older adults, the importance of age and connectedness to others with a shared age range and health status is reinforced in non-walking literature. Evidence from older adult PA or social clubs identified the importance of fun and laughter, sometimes referred to as 'banter' which helped to cement and define older adult groups involved in PA and other group activities (Dunlop & Beauchamp, 2013; Franco et al., 2015; Hemingway & Jack, 2013). In turn, such connections with other participants within the group led to participants attending regularly so as not to miss out (Mehra et al., 2016) . The development of social connection and cohesion of the group often led to an extension of care and concern for other group members, especially if there was a degree of unexpected non-attendance (Dunlop & Beauchamp, 2013; Grant, et al., 2017a). The development and enhancement of social cohesion was sometimes linked to shared life experiences such as bereavement or ill-health in a life partner (Hemingway & Jack, 2013). Meeting others with similar issues and challenges also appeared to help reinforce a shared identity (Mehra et al., 2016)

4.2.3. Recap of what we know and what we do not know

In terms of what we know: a recent update to the walking literature has identified that interventions designed to encourage walking behaviour have been too focussed on individual and environmental factors, to the detriment of social environmental factors (Foster et al., 2018; Hunter et al., 2018). In fact, walking behaviour maintenance may well be better supported by connecting with existing social networks and norms (Hunter et al., 2018). Despite a recognition of the values of social environmental factors in the maintenance of walking behaviour, there is inconsistency in the use and definition of the term social environment. McNeill et al. (2006) advocate it is made of up five dimensions. Three of those dimensions were highly observed in study one of this thesis: the systematic

review of why older adults start and continue to walk with walking groups. These three dimensions are social support and social networks; neighbourhood and community characteristics; and social cohesion and social capital. Social interaction within activities is also important for older adults because at their age and stage of life, they are more vulnerable to isolation and loneliness (Cattan et al., 2005; Coyle, 2011). In terms of social environmental factors important to older adults, walking, and the initiation and continuation of walking behaviour, there is also consistent reporting and evidence of the existence of these three dimensions of social environmental factors (Ball et al., 2017; Kwak et al., 2006; Lee et al., 2007).

In terms of what we do not know: firstly, there is sparse literature that focuses specifically on older adult social environmental factors within a group walking context. Most older adult walking group studies consider a plethora of factors that relate to individual and environmental factors as well as social factors (Ingram et at., 2009; Grant et al., 2017a; Duncan et al., 1995a). As such, they do not have such a spotlight on social-environmental factors. Secondly, the older adult group walking literature does not have a specific focus on the transition between the initiation and continuation phases of group walking, and if social environmental factors are the same or similar in both phases, or if they are very different. In addition to this, older adults have not been asked to indicate which social environmental aspects are especially important during each phase of group walking to them, including during the transition stage between phases.

4.2.4. The aims of the WE:ROASE study – exploring what we don't know and would like to understand in more detail

Due to the recognised gap within the older walking literature relating to the link between social environmental factors and walking behaviour, the first aim of the WE:ROASE study was to identify and understand the social environmental factors experienced by older adult group walkers during the initiation phase of walking. In order to seek some clarity in relation to whether those factors identified as important during the initiation phase are consistently the same within the continuation phase or differ, the second aim of the WE:ROASE study was to identify if the social environmental factors change or stay the same

during the continuation phase of walking. Therefore, the specific research questions for this study were as follows:

1) Which social environmental factors are important during the initiation phase of walking with the group?
2) Did these important social environmental factors change or stay the same during the continuation phase of walking with the group?

4.3. Methods

4.3.1. Design

The WE:ROASE study was designed as a qualitative study to better understand why older adults participate in group walking for social reasons. Focus groups were selected for capturing the qualitative data (Barbour, 2007; Creswell, 2003). Focus groups are defined as a versatile type of group interview that generates and reports on participant experiences and activities, whilst also capturing an interactional element between participants (Barbour, 2007). Participants in focus groups are encouraged to talk amongst themselves as part of the feedback process, but individual voices also need to be listened to, and captured within the data, by the researcher (Barbour, 2007). As such, focus groups are recognised as a qualitative format that are good at unearthing not only what participants think, but why they think as they do (Barbour, 2007). Focus groups are highlighted as especially appropriate for participants who have or are experiencing the same situation(s) (Barbour, 2007). Focus groups are also recognised as being effective at providing insights into a process and not necessarily an outcome (Barbour, 2007).

Ethics approval was gained through the University of Edinburgh's ethics committee (see appendix 6). Five focus groups were carried out with older adult group walkers to identify which social factors were important during the initiation phase of walking. Participants were then asked if those factors changed or stayed the same during the continuation phase, and finally when changes took place if they did occur.

4.3.2. Recruitment

Recruitment was undertaken within the Paths for All (PfA) network of walks within Scotland. The first researcher NL contacted PfA walk coordinators and received responses from two in Edinburgh, one in East Lothian, one in Fife and one in Glasgow. Walk coordinators then contacted their relevant walk leaders. In Edinburgh, two walk leaders from separate locations within the city agreed to take part in the study. In Fife, two walk leaders also agreed to take part from the same location. A walk leader in East Lothian and Glasgow also agreed to take part. All walk leaders except one discussed the possibility of hosting a focus group at the end of a walk with walkers, and reported back to NL that walkers were interested in taking part.

4.3.3. Participants

Participants were older adult walkers attending PfA walking groups in five locations in Scotland. There was a mixture of men and women, with women participants making up three quarters of focus group attendees. The majority of participants had been walking with their groups for over six months, but a few participants had been attending for a shorter period. Some of the participants were walkers in specific groups, but also had roles as walk leaders in other groups. These participants were asked to respond from the perspective of walkers during participation in focus groups. In order to protect the anonymity of participants, pseudonyms were used in the reporting of findings.

4.3.4. Inclusion/exclusion criteria

All walkers in the walking groups, who were staying for refreshments post walk, were invited to take part in the focus groups. This was advised by walk leaders to minimise the risk of causing offense to participants, whatever age, who routinely stayed for refreshments. Older adult status was confirmed either by given date of birth on consent forms or by verbal confirmation to the first researcher NL.

4.3.5. Data collection

4.3.5.1. Data collection location

Five focus groups were conducted in June and July 2019. Prior to the focus group, the lead researcher NL walked with each group and spoke to participants about the purpose of the study during the walk. Some of the conversations during the walks provided prompts for the lead researcher NL during the focus group itself. Having started discussion amid the relaxed environment of the walk, some participants appeared to be more confident in speaking up at the focus group itself. At the end of the walk, all but one group returned to their starting point, and one stopped at a pub. The focus groups took place in an area or room within the home building for those returning to their starting point. The focus group in the pub took place in the rear garden.

4.3.5.2. Managing consent to take part

All participants signed a consent form to take part. The consent form also requested information regarding age, length of time walking with the group and declaring health conditions. Some participants did not wish to confirm exact age, but indicated to the lead researcher NL if they considered themselves to be an older adult. Consent to tape the focus groups was also requested and captured on the audio recording itself. The lead researcher NL allocated each participant a number in order to assist the anonymising of responses during transcription.

4.3.5.3. Data collection instrument/schedule

At the beginning of each focus group, the lead researcher NL explained the purpose of the focus group and its aims and the questions participants would be asked, (see appendix 7 for the focus group schedule). As the questions related to the initiation and continuation of walking in groups, definitions for each stage were provided as follows:

4.3.5.3.1. Definition of the initiation phase of group walking

The first researcher NL defined the initiation phase for participants attending the focus groups as the first six months of walking with the group. However, the first researcher NL confirmed this timescale was only one definition of the initiation phase, and participants could consider other definitions as more appropriate to them, such as frequency and/or regularity of attendance.

4.3.5.3.2. Definition of the continuation phase of group walking

The first researcher NL defined the continuation phase as being from six months attendance upwards. Similar to the explanation relating to initiation, this definition was defined as only one interpretation of the continuation phase.

4.3.5.3.3. Focus group questions

In three of the focus groups, the lead researcher NL asked a series of questions and then participants discussed responses for five to ten minutes in groups of two or three (see appendix). Participants were then asked to volunteer their group responses. Although working in groups, the first researcher NL encouraged all participants to volunteer information. Two of the smaller groups preferred to respond individually as each question was asked, rather than discuss in smaller groups initially. Focus groups were around half an hour to 45 minutes long. The questions asked related to three specific sections of the focus group. Question one asked participants to consider which social aspects were important to them during the initiation phase, and when those social aspects became important to them timewise within the initiation phase. The second phase of the focus group was introduced with a question about which social aspects were important to participants when they had been walking for six months and beyond. Participants were also asked to identify when those factors became important to them within the timescale of post six months. The third and final phase of the focus group was introduced with a question which social aspects were important or different in each phase. Were they similar or very different? In relation to question three, many participants had already begun to address these issues during questions one and two. In these instances, the main researcher NL asked participants in the

third phase of the focus groups if they had any further social aspects to comment on in relation to being the same per phase, similar or different.

4.3.6. Data Analysis

The qualitative methodology selected to analyse the data was Braun & Clarke's six stage thematic analysis (TA) (Braun & Clarke, 2006; Clarke & Braun, 2017). TA is a method for analysing data by identifying, analysing and reporting patterns within the data. According to Clarke & Braun (2017), TA is an ideal process by which qualitative data can be analysed because it is flexible and can be applied across a range of paradigms. Due to the theoretical freedom this process provides, Braun & Clarke (2006) recommend that prior to undertaking the analysis, it is important to clarify the theoretical stance underpinning the analysis, rather than leaving this unstated. Specifically, Braun & Clarke (2006) recommend the paradigm underpinning the research is identified. Similarly, identifying whether the thematic analysis will be inductive or theoretical is also helpful, together with identifying the method adopted to create themes of meaning. Braun & Clarke (2006) recognise the importance of achieving a balance between precision in relation to the theoretical approach being selected within TA whilst maintaining enough flexibility so the methodology does not constrain data analysis and interpretation. Clarification of the theoretical stance for the WE:ROASE study is detailed below:

4.3.6.1 Paradigm

The WE:ROASE study adopted an essentialist approach. The essentialist approach according to Braun & Clarke (2006) identifies, interprets and reports the meaning and experiences of those being studied in a straightforward and direct way. As such, meaning can be interpreted from what is said by those being studied, in the form of the language being expressed. In other words, what participants say is what they mean. The reporting of direct participant quotes in results reinforces this essentialist approach because the participants' words themselves indicate meaning.

4.3.6.2. Inductive or theoretical thematic analysis

The WE:ROASE study adopted an inductive approach to thematic analysis. According to Braun & Clarke (2006), an inductive approach results in themes which are strongly linked and borne from the data. Although the initial questions designed for the focus groups were strongly linked to addressing and answering the research questions, the semi structured nature of the focus groups enabled new questions to form. Participants were able to discuss issues important to them, and could expand upon initial questions, ultimately providing richer responses. Due to the inductive nature of analysis, all answers were recorded, analysed and given a theme, whether these themes related to social environmental factors or not. Those themes agreed during the later critical friend process as not relating to social environmental factors were taken no further (see phase four reviewing of themes below). Similarly, theme generation from the data collected from the WE:ROASE study were not compared to the McNeill et al. social environmental themes until all WE:ROASE themes had been finalised. This ensured the WE:ROASE themes were relevant first and foremost to the data collected during the study.

4.3.6.3. Semantic or latent themes

The WE:ROASE study adopted semantic themes. In keeping with the essentialist paradigm according to Braun & Clarke (2006), semantic themes focus on explicit meanings of what is being said. This is in contrast to the latent theme approach which looks for hidden or underlying meanings. Although the essentialist approach to theme development is depicted as a more simple process (2006), it still involves a comprehensive interpretation of the data, and not just a reporting of what was said.

4.3.6.4. Six stage analysis process

The Braun & Clarke six stage analysis process (2006) was adopted for the WE:ROASE study as detailed below:

4.3.6.4.1. Phase one of analysis – familiarisation with the data

The main researcher NL transcribed the focus groups which provided an opportunity for becoming familiar with the data from all groups. During transcription, any thoughts and ideas relating to pockets of meaning were noted.

4.3.6.4.2. Phase two – generating initial codes

The main researcher NL uploaded all transcripts into the qualitative data analysis software package NVivo version 12, read each transcript again and began forming codes of meaning (also referring to notes made during transcription). Braun & Clarke (2006) define codes of meaning as a basic segment of the raw data that can be assessed in a meaningful way. The whole transcript was read again on screen and marked up with codes. For thoroughness, even parts of the transcript that did not address the research questions were coded.

4.3.6.4.3. Phase three – searching for themes

Once all transcripts had been individually coded, a grouping exercise was carried out by the main researcher NL, developing a series of themes and sub-themes if some themes became very large. In some instances, codes could be attached to more than one theme. For thoroughness, codes which did not address the research questions were also grouped into a series of themes.

4.3.6.4.4. Phase four – reviewing of themes

The second researchers AN and SF adopted the critical friend approach (Green & Miyahara, 2007; Storey, 2016). This involved first researcher NL and second researchers AN and SF meeting to discuss themes and sub-themes to test and check for accuracy of theme and sub-theme allocation and definition. This resulted in some adjustments to the wording of themes/sub-themes and the occasional reallocation of codes to alternative themes/sub-themes, to enhance the clarity of reporting. At this stage all codes and themes which did not relate directly to the research questions were analysed no further.

4.3.6.4.5. Phase five – defining and naming themes

In keeping with the reviewing process during phase four, themes were finalised and names were confirmed. Themes were specifically defined around the research questions. In accordance with Braun & Clarke (2006) research questions can evolve during the data collection and analysis process. The research questions for WE:ROASE did evolve during data collection, especially in relation to the characteristics and timescales of the transition of the initiation phase into the continuation phase.

4.3.6.4.6. Phase six – producing a report

The write up of themes is contained within the results section detailed below.

4.3.7 Validity and reliability of findings

In terms of the trustworthiness and credibility appropriate to qualitative data, the WE:ROASE study adopted the key strategies to maximise the trustworthiness of data collected and analysed (Creswell, 2003). According to Creswell (2003), firstly, thick and rich descriptions of the data were used within the findings including multiple quotations, ensuring the findings were directly linked to the spoken words of participants. Secondly, the researcher bias was identified which provided self-reflection and an open, honest narrative. Thirdly, peer debriefing was conducted by second researchers AS and SF (Green & Miyahara, 2007; Storey & SpringerLink, 2016) who probed the initial findings of the main researcher NL, in order to seek clarity and meaning by asking questions during the process.

4.4. Results

Five focus groups were carried out within Scotland. Two were within the city of Edinburgh and one was in the city of Glasgow. The remaining two were towns very close to the Scottish coast, one in Fife and the other in East Lothian. There were 39 participants in total within all five focus groups. Of that 39, 10 were men and 29 were women. All eligible participants considered themselves to be older adults. Of those who confirmed their age, the range was 56 years to 81 years. A few participants did not want to be specific about their age within the older adult age group, hence it is difficult to calculate the mean age of

participants. The size of the focus groups ranged from 12 people in Fife; six and eight people within the Edinburgh groups, seven in the Glasgow group and six in East Lothian.

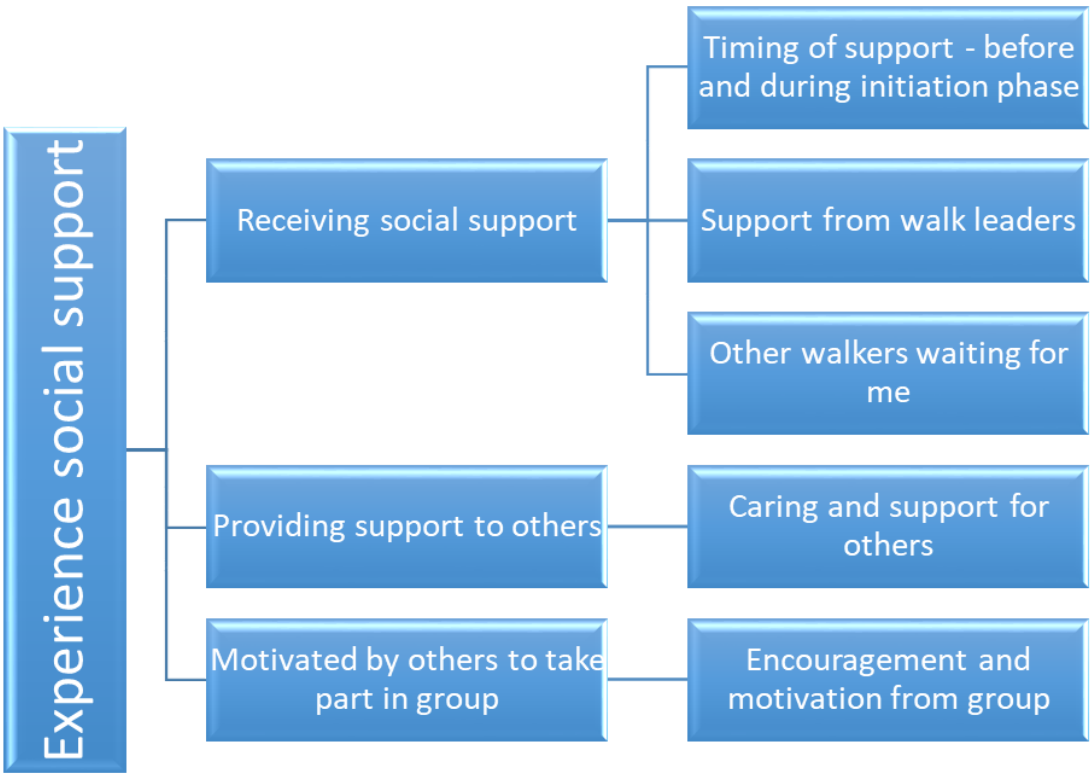
4.4.1. Research question one: Which social aspects or experiences were important to you during the initiation period of walking?

Themes and sub-themes relating to research question one: There were four main themes relating to question one with a range of sub-themes and categories of meaning. Each theme is illustrated below (see figure 1 to 4), and expanded upon in more detail, with supporting participant quotes. Pseudonyms have been used to replace any participant names mentioned within the quotes.

4.4.1.1. Experience of social support

This theme was defined as the experience of both receiving and providing support for others, namely from walk leaders, fellow walkers plus friends and family. This theme also reflected the motivation experienced as a result of the supportive nature of a group. See figure 14 below for the illustration of this theme.

Figure 14: Experience social support - theme within the initiation phase of group walking



4.4.1.1.1. Receiving social support

Receiving social support was an important sub-theme and related to support from fellow walkers, walk leaders and friends. The timing of social support was also recognised as important within this study. Support prior to starting was identified as a significant factor in encouraging attendance, especially from the walk leader, as described by a participant in Edinburgh: "Aye it is hard [to join a new group]. Shirley [the walk leader] came to me and asked me if I wanted to come, and [asked] if I am going to like it". Support on the first day of attendance from the walk leader was also recognised as important by some participants. The sense of welcome and encouragement to return was defined well by a participant in East Lothian: "As soon as someone comes in they [walk leaders] pull a chair in, and they say 'come over, and don't sit back, but join the group'". Similarly, many participants expressed an understanding that fellow walkers began to wait for their arrival during the initiation period and this type of support was greatly appreciated.

4.4.1.1.2. Providing support to others

Being able to provide social support for others was also an important sub-theme of social support, even during the initiation phase of being with the group. There was a sense of returning the favour of being supported, by seeking out opportunities to support others in turn. An example of this was provided by an Edinburgh participant: “Well, I know Mary, and her husband had died and I was in this walking group, and I said to her, ‘Would you like to come?’, because she liked walking with her husband anyway.” For some participants, they enjoyed the opportunity to care about other walkers and not be so self-absorbed.

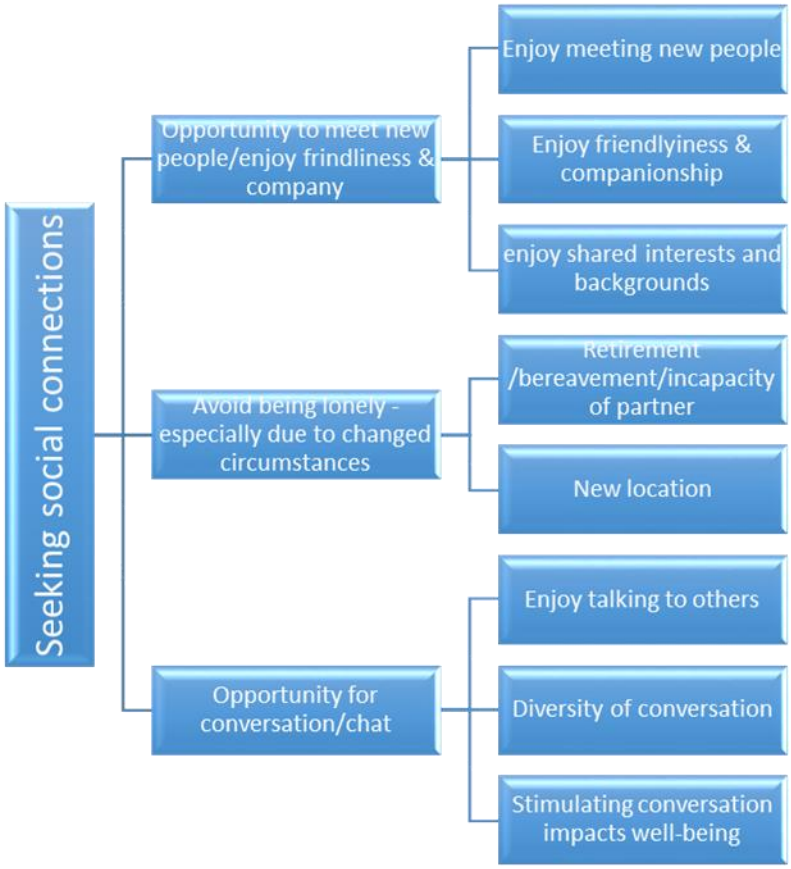
4.4.1.1.3. Motivated by others to take part in the group

One of the positive consequences of feeling supported by the group was a sense of motivation to take part. This is illustrated by one walker in Edinburgh who reported: “Sometimes you think, ‘I’ll no’ bother’, but you know other people’ll be there, waiting to see if you come to the walk.” Another Edinburgh participant felt that encouragement from group members pushed her to walk further afield, and for longer: “I think you get encouragement from the group. [Other participants respond with ‘oh yes’]. If you were to do it on your own, well you just wouldn’t do it on your own. I wouldn’t have walked where we walked [today’s walk] on my own”.

4.4.1.2. Seeking social connections

The theme of seeking social connections was extensive and defined as a desire by participants to find more social opportunities and connections, especially prior and during the initiation phase of walking. The theme incorporated issues such as meeting people and staving off loneliness, experiencing friendliness, company and conversation as illustrated in figure 15 below.

Figure 15: seeking social connections - theme within initiation phase of group walking



4.4.1.2.1. Opportunity to meet new people/enjoy friendliness and company

Many participants in this study spoke of a general desire to meet new people and enjoy the friendly companionship of fellow walkers and walk leaders, especially during the initiation period, as described by a walker from Fife: “I’ve been a carer for my wife for many years and she eventually had to go into a nursing home and I felt isolated because I was by myself, and I also wanted to just meet people”. Similarly, the sense of companionship was often enhanced by the option to socialise during and after the walk as described by a walker from East Lothian: “We do these lovely walks and you come back and meet lovely people and have a wee chat and coffee and that.” Many participants also expressed pleasure in spending time with other walkers with similar backgrounds and experiences.

The opportunity to reminisce with other walkers was especially appreciated amongst this age group as illustrated by a Glasgow participant:

> We quite often go for a cup of tea and get talking about the things we did when we were young….When we were wee, we were scraping the ice of the inside of the windaes [windows], so it comes from the fact we are all similar.

4.4.1.2.2. Avoid being lonely especially due to changed circumstances

In addition to a general desire for more social contact and companionship, some participants had specific reasons for seeking connections with others, due to changes to their life circumstances. Such changes related to bereavement, incapacity of a life partner or retiring to a new location. In many cases, participants acknowledged their changed circumstances had left them lonely or isolated, as confirmed by a participant in East Lothian:

> My wife died three years ago, and I became a bit of a recluse, a hermit. My sister in law came to see me and she said, "You need to get out dear"…so I joined this walking group and never looked back.

4.4.1.2.3. Opportunities for conversation and chat

This sub-theme was strongly linked to companionship because the desire to speak to other people in a group setting was often important to the sense of connection. However, the opportunity for conversation and chat is an important sub-theme in its own right, due to the type and nature of conversations, which were important. A participant in Fife spoke about enjoying the diversity and informative nature of conversations during attendance:

> So you learn more, when you're out walking. I'm not very good with what the trees are, what the birds are, but there is always someone in the group who knows the history of where we are, knows the birds' names or the trees.

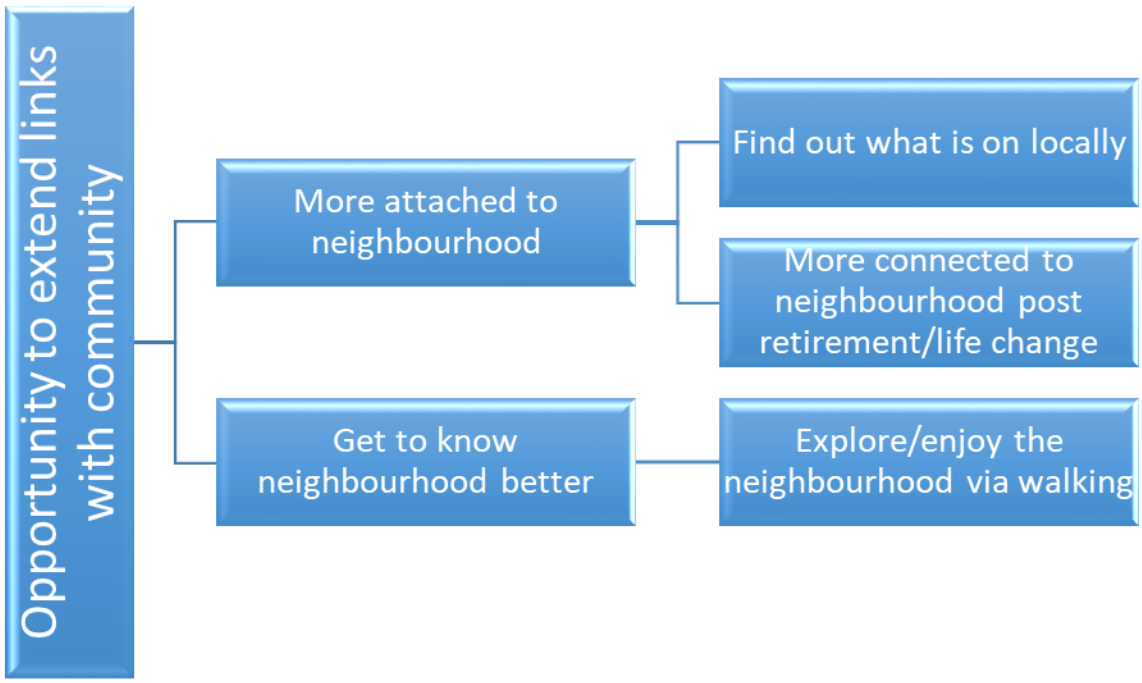
Another walker in Fife demonstrated that the stimulating nature of conversations had an uplifting impact on many walkers' mental health:

> You're not just walking along looking at things, you're having conversations, discussing different matters, that sort of thing….and that's really important because you just feel not only physically, but mentally better when you come back.

4.4.1.3. The opportunity to extend links with the community and neighbourhood

This was an important theme during the initiation stage of walking and is defined as a desire to establish closer links with the neighbourhood and local community. The walking group provided an opportunity to fulfil the desire to be closer to and better acquainted with the aspects within the immediate neighbourhood, as illustrated in figure 16 below.

Figure 16: Opportunity to extend links with the community - theme within the initiation phase of group walking



4.4.1.3.1. More attached to neighbourhood

During the initiation phase of walking, many participants were looking for opportunities to become more aware of, and involved with, activities and people based locally. One Edinburgh participant highlighted that getting more involved in the local area related to changed personal circumstances:

> I thought [since retirement] I'm going to look for something in the community….I hadn't realised how extensive the community is round here was, and the things they did, until I started here and it's on my doorstep and I didn't even know what was going on.

4.4.1.3.2. Get to know neighbourhood better

Within the initiation phase, many participants were looking to take the opportunity to explore the local neighbourhood via walks with the group. Many enjoyed the chance to get to know the local walking routes, including flora and fauna. For a participant from East Lothian, the initiation phase of walking allowed her to explore her new vicinity: "We found that it [the walking group] took us to parts of the town we didn't know, as well as meeting other people."

4.4.1.4. The positive nature of the social environment

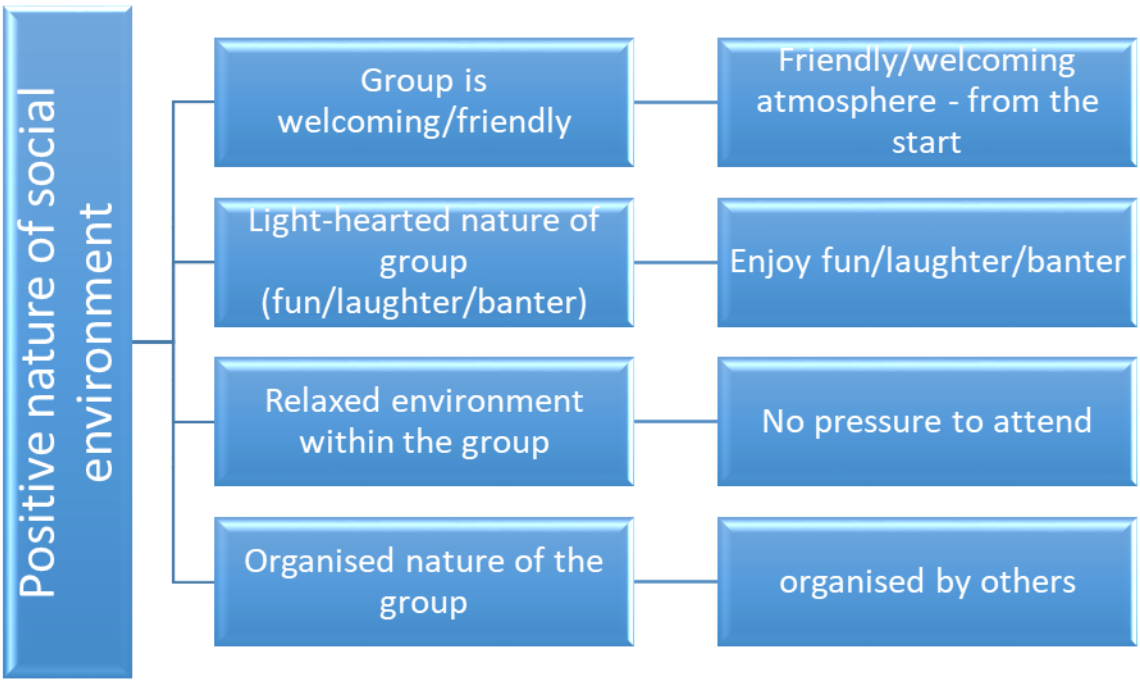
The final theme within the initiation phase was the positive nature of the social environment of the group. This theme was divided into four sub-themes. Three of the sub-themes were more social in nature and were defined as experiencing the atmosphere and nature of the group environment as upbeat and motivating. A further sub-theme related more to the physical environment and organisational aspects of the group, as illustrated in figure 17 below:

4.4.1.4.1. The group is welcoming/friendly

This sub-theme was strongly linked to both social support from others, and also friendliness and companionship of other walkers. The welcoming and friendly nature of the group was

important to participants from the start. In some cases, this made a significant difference to ongoing participation, as related by a participants in Edinburgh and East Lothian:

Figure 17: Experience positive nature of social environment - theme within the initiation phase of group walking



> It's a very friendly group…it was made very welcoming. People were friendly. I mean if that hadn't been there from the start, then I probably wouldn't have went back.

> That's the nice thing, you're made to feel very comfortable, even from day one when I joined. You were made to feel comfortable even though they were strangers.

4.4.1.4.2. Light-hearted nature of the group – fun, laughter and banter

Many participants responded positively to the light-hearted nature of the group, with an emphasis on fun, laughter and 'banter'. The importance of 'the banter' was mentioned by

participants in at least four of the focus groups and was implied by the fifth. 'Banter' as culturally relevant to Scottish social life was recognised by many participants, as described by a participant in Fife: "With our group…..we can banter back and forward, and we go for a coffee afterwards, and that brings the social aspect to it as well". Similarly, fun was also expressed and discussed in all focus groups, and seemed to play a major part in the light-hearted nature of group walks, relayed by a participant from Glasgow: "Sometimes we come back here and end up talking about cooking and it's supposed to be a health walk! [Group laughter]. We kid around quite a lot."

4.4.1.4.3. Relaxed environment of the group

This sub-theme reflects the relaxed nature of the group which put participants at ease and took the pressure off feeling the need to attend every week. An Edinburgh walker explained: "But no-body feels any pressure that they have to come every week. It's here and people can come along as and when they want to."

4.4.1.4.4. Organised nature of the group

This sub-theme related more to the physical environment of the group, where many participants enjoyed the opportunity to attend a walking group without having to be responsible for its organisation or have the burden of exercising alone, as confirmed by a participant from Fife: "It's organised exercise with people. It's always going to be organised, rather than having to go out by yourself."

4.4.2. Research question 2: Did those important social aspects and experiences change or stay the same during the continuation phase of the group?

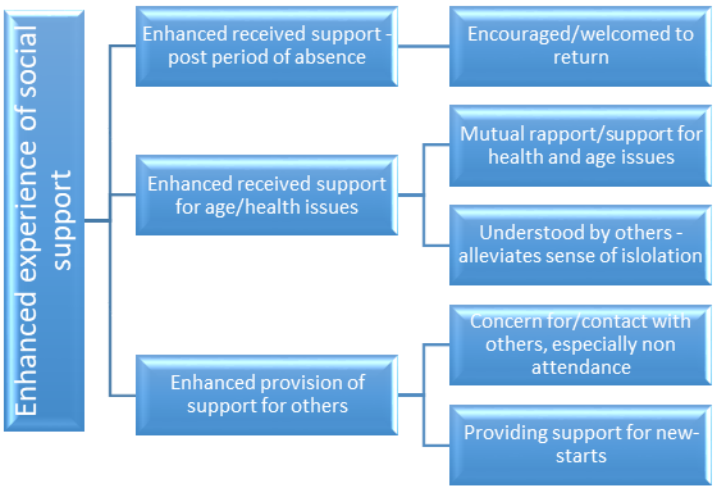
Themes and sub-themes identified for question two: There were four main themes identified in relation to responses to this question. The themes identified in the continuing phase were similar in the main to those established for question one. However, the continuation themes had a greater focus on the consolidation, enhanced quality and development of experiences identified in themes within the initiation phase. The themes

identified in relation to question two are detailed below, with a supporting figure for each theme.

4.4.2.1. Enhanced experiences of social support

This theme was similar to the social support theme depicted in the initiation phase, but participants felt an enhanced sense of support as a result of walking and interacting with participants for a longer period of time. As with social support during the initiation phase, support related to both receiving and giving support. Enhanced support was particularly connected to specific health and age related issues experienced by older adult walkers within this study.

Figure 18: Enhanced experience of social support - theme within continuation phase of group walking



4.4.2.1.1. Enhanced received support post period of absence

This sub-theme was common to all groups within the study, and incorporated a strong sense of support to return following illness, bereavement or family commitments. The ability to come back resulted from the support they received from strong friendship groups already established within the walking group. This was explained by an East Lothian participant who was not well enough to actually walk with the group, but had started a

gradual return by joining the walkers after their walk for refreshments and a chat: “With me being incapacitated for three months, but I come every Monday to be with my friends [for a cup of tea and a chat].” The support of friends established at the group enabled a participant in Edinburgh to return to the group following the loss of her husband: “When my husband was ill I had to stop coming, but then after he passed away, I’d made friends, so they supported me, so I decided to come back”.

4.4.2.1.2. Enhanced received support for age/health issues

The longer participants walked with the group, the more comfort from shared discussions and support they experienced in relation to age or health issues. In Fife, a participant summed up the comfort of sharing information about a shared health condition:

> As people get older, and you’ve been in the group that long, people have different medical conditions and you can talk to people and get support for them, and other people talk openly about things that have happened to them, and you can talk openly about this.

Similarly, the support from others was also experienced as a form of comfort in the knowledge others understood health issues, reducing the sense of isolation, as shared by a participant in East Lothian:

> Some people will come on the walk and you’ll realise they have gone through the same things as you. Some may have depression and anxiety, and you think, “Oh well great, I’m not the only person going through this”, and I think this helps, and you in turn can help them.

4.4.2.1.3. Enhanced provision of support for others

This sub-theme was also similar to its initiation phase counterpart, but the degree of support offered by participants to their fellow walkers was more pro-active, such as getting in touch with them outside of the group to check on their welfare, and meet up away from the group. This was explained by a participant in Glasgow:

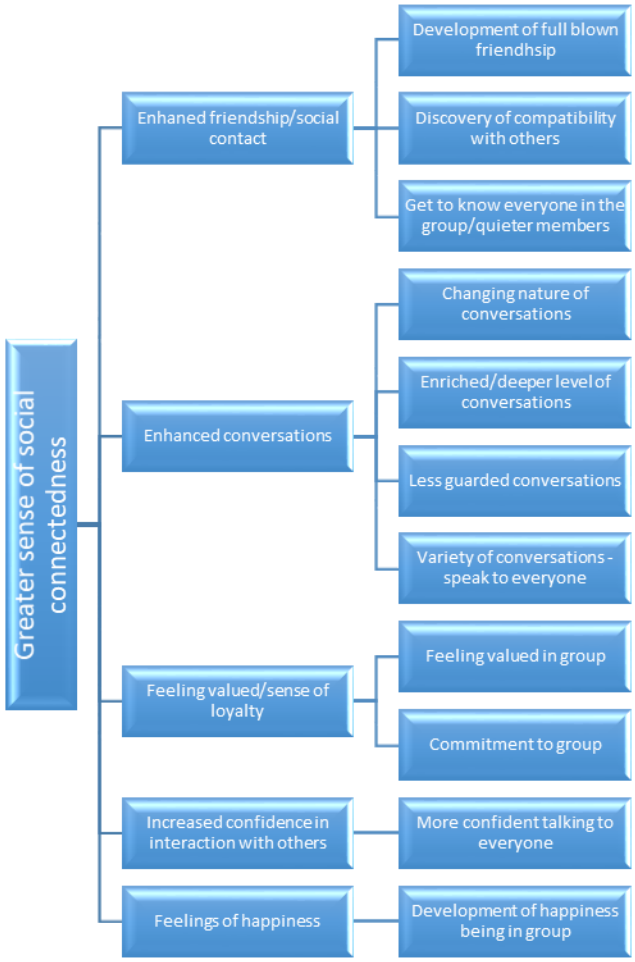
> I used to go to an exercise class and met Valerie, and told her about the walking group and she came ….I'd known her for six months at the group, but it wasn't until she was going in for her operation that I took her number….so we keep in touch via text, I ask how she's getting on, come for a cuppa tea, and send cards.

Another important aspect of providing support for others during the continuation phase related to providing support for new starts to the group, helping them settle in and providing a buddy type role if needed. This was explained by a participant in Fife: "Even one of my neighbours, I spoke to them about coming back, and they did. I'm hoping to get more people to come to the walk, to get them oot [out] instead of sitting aboot [about]."

4.4.2.2. Greater sense of social connectedness

This theme is similar to the seeking social connections theme experienced during the initiation period. However, during the continuation phase, this theme was defined as a deeper and more rewarding experience of being connected to others within the group. An enjoyment of the growing sense of belonging and commitment to the group is also a key aspect of this theme. As illustrated below in figure 19, this theme is large and has six sub-themes.

Figure 19: Greater sense of connectedness - theme within the continuation phase of group walking



4.4.2.2.1. Enhanced friendship/social contact

Participants in all groups within the study defined this continuation sub-theme as the development of friendliness into full blown friendship. This theme was illustrated as a sense of compatibility and shared interests by participants in Glasgow and Edinburgh, which in turn led to further social opportunities: “It’s about being compatible. We’ve just come back from a week’s holiday together.”

> We just mentioned, ken, [you know], that we liked to go [on] bus trips, and we hadn't really been doing bus trips because we didn't have anybody to go with, but the two of us wanted to go bus trips, so we do that.

Another key aspect of enhanced friendships within the continuation phase of walking in groups relates to the opportunity to get to know all participants better in the group. In Edinburgh, the chance to get to know people better eased as the weeks passed according to a participant: "It gets easier because you get to know people better, as the weeks go by it gets easier because you get to chat to people."

Similarly, the continuation phase also facilitated the opportunity to become better acquainted with participants who were initially reserved during the initiation phase of walking. One example of this enhanced familiarity was explained by a participant in Glasgow: "And you get a chance to talk to the ones who have been quiet, but it doesn't happen [quiet ones] very much here [group laughter]."

4.4.2.2.2. Enhanced conversations

This sub-theme was depicted by the changing nature and enrichment of conversations, which were linked to the development of stronger and trusted friendships, as experienced by a participant in Fife:

> Once you are really socialised into these groups, you notice that conversations become different, more in-depth, maybe more open to what you say to each other….prior to that, people are watching what they say to each other. Once you get to know them you can say what you like [group laughter].

Similarly, within the continuation phase, a greater sense of familiarity with fellow walkers leads to conversations and discussions becoming less guarded and more open, especially between participants of a similar age and background, as explained here by a participant from Glasgow. "After six months, you get more relaxed with the group, so you'll maybe come away and talk about thing you wouldn't have talked about, or get rid of woes". For some participants, continuation enhanced the type and range of conversations available to

them, partly because of the ability to talk to everyone within the group. This was defined by a participant from Fife:

> I think with our group, we all know each other so well. With some people you can talk about something or other and with another, you can talk about something else. Different people have different interests, so you get involved.

One aspect of enhanced conversations in the continuation phase related to the chance to spend time with everyone during refreshments. Some participants tended to walk with the same participants during the walks because they had similar walking speeds. However, during the continuation phase, people had managed to befriend larger groups of people by enjoying the opportunity of sitting with different people during refreshment breaks. In Glasgow, one participant explained:

> I think that is where the comfortable bit really adds [comfortable with others] because a lot of the walkers walk at different paces, so you get to know the people that you walk with, and those just behind you, but it's kind of when we come back here that everybody comes together.

4.4.2.2.3. Feeling valued/sense of loyalty as part of the group

The sense of feeling valued, and in return rewarding the group with a sense of loyalty, was an important sub-theme within the continuation phase. As friendships and the level of support increased during the continuation phase, many walkers began to feel valued by others in the group. One participant in Edinburgh felt especially valued as a result of being supported by friends at the group following the loss of her husband: "It was the first step into rehabilitation wasn't it? They looked after me, carried me". Another Edinburgh participant expressed a sense of being valued and included by the group, and in return felt a sense of loyalty and unity:

> Yes and it comes from everyone in the group [unity]. When we come here, we're all in the same boat. It doesn't matter what you've got [issues]. The longer you come, people are opening up to various things, once you get to know people.

For a participant in Fife, he expressed a sense of being valued by the group when he returned following a period of illness:

> Last summer I was quite unwell. I was losing my sight and fell and broke my hip, then went blind. So I wasn't at the group for a long time. I've now got some of my sight back, and I was determined to come back to the group. I found I was welcomed back and I picked up my friendships where they'd left off. So you get supported, and people are asking how you are. It's like that, it's encouraging.

4.4.2.2.4. Increased confidence in the interaction with others in the group

This sub-theme is linked to getting to know others in the group better. Due to the duration of friendships and getting to know everyone in the group, a sense of increased confidence in the ability to interact with others was a benefit to many participants, including one from East Lothian:

> I think you change slightly, you come in with a bit more confidence. It feels like you sneaked in and settled into the group, but as you get to know people better, you get a bit more confident.

4.4.2.2.5. Feelings of happiness from being part of the group

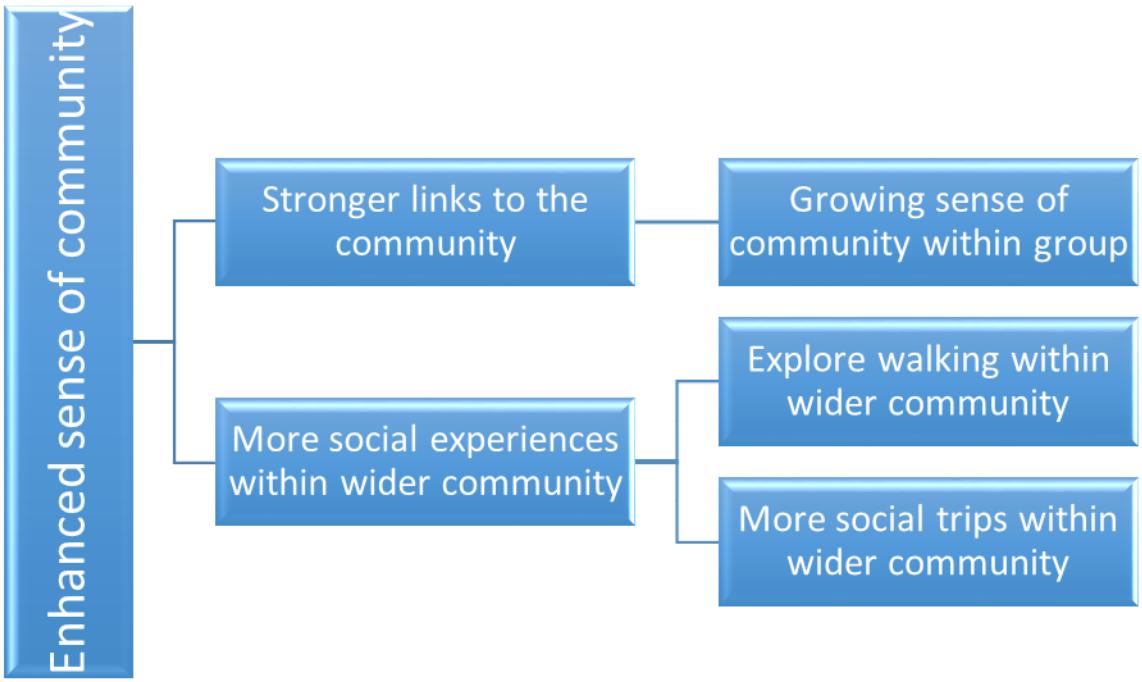
During the continuation phase, a feeling of happiness as a consequence of enhanced friendships, more relaxed and in-depth conversations and sense of being valued was expressed by many participants. This was succinctly expressed by a participant in Glasgow: "Because we're all happy. It's that simple!"

4.4.2.3. Enhanced sense of community and neighbourhood

Although similar to the initiation phase, this theme was defined as a greater commitment to the wider community both in terms of the immediate vicinity of the walk and its wider geographical boundaries, and also to the sense of community within the walking group. This theme was divided into two sub-themes: closer links to the community; and more

social experiences within the community, including trips further afield with the walking group and other activities within the locale, as illustrated in figure 20 below.

Figure 20: Enhanced sense of community - continuation themes within group walking



4.4.2.3.1. Stronger links to the community

Closer links to the community related to both the wider community but also an enhanced sense of the community for the walking group itself. In terms of stronger links to the community, many participants developed this through their regular attendance. A Glasgow walker explained:

> In the modern world, no one chaps your door, we don't have that culture anymore….whereas when you come to the walking group, it's like the last 40 years hasn't happened. It still has the same community spirit.

As a consequence of such a developing and strong community spirit within the group itself, a sense of belonging and commitment often followed for many participants. This was

especially facilitated by a shared sense of age and stage of life. Participants in Edinburgh and Fife summed up their experiences related to this: “Most of us here are over 60, so you are saying things more openly about things that youngsters won’t speak about. You’re not worried you will upset somebody else. That sort of thing, more open”.

> You can say what’s worrying you. A lot of young folk, and they’re not meaning it intentionally, but they dinnae [don’t] understand. So you think maybe I’m stupid, but then you go with folk your ain [own] age, they understand.

4.4.2.3.2. More social experiences within the wider community

For some participants, the friendships and links developed within the community led to other activities with new friends within the neighbourhood. This was expressed by two participants within Edinburgh groups: “We look forward to catching up with everyone, finding out about trips planned or courses that are going on, I’m always ready for something new.”

> I’d been walking for about six months which took me to Christmas, which took me to December. I usually hate Christmas because I don’t have much family, and it was nice to be invited to some Christmas lunches….so that brightened things up for me.

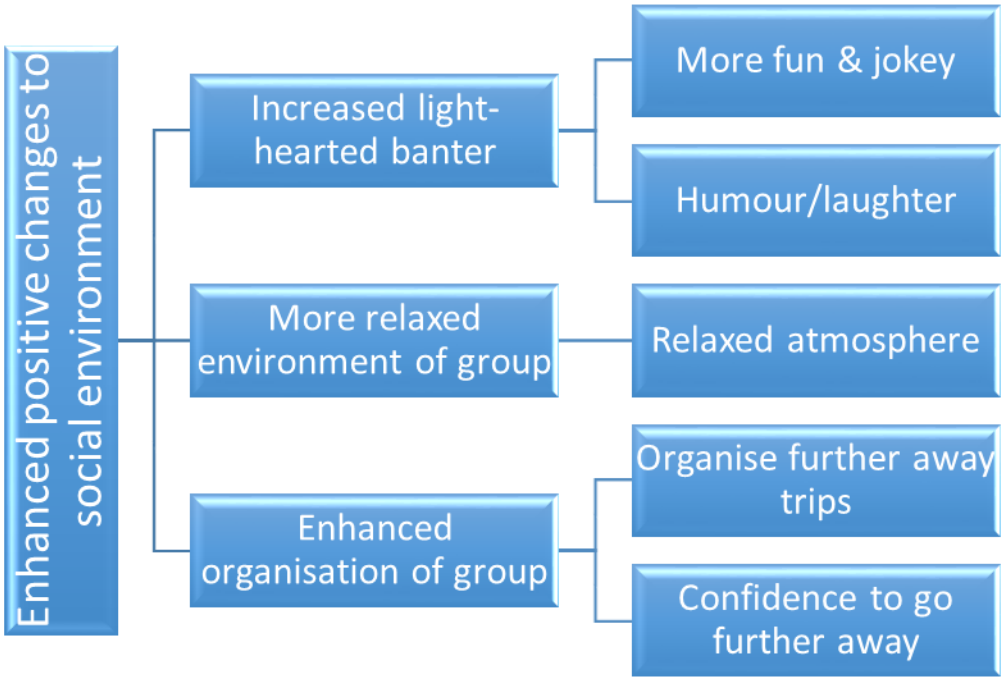
In Glasgow, some participants highlighted their experiences and opportunities to undertake more activities together within the community, including more physical activity: “And now we go cycling and that’s stemmed from starting to walk…and after this we’ll go for a swim.”

> We also did the Clyde Tunnel walk. We talked about wanting to do it and the walk leader found out about it and we did the walk. We went down and back and we took our time, and then we had lunch when we finished. And sometimes if we go to something, we now walk home.

4.4.2.4. Enhanced positive changes to the social environment of the group

The positive nature of the social environment was identified as an important theme during the initiation phase. Within the continuation phase, many participants found these positive experiences developed even further, and became more satisfying. The sub-themes reflecting this enhanced positive nature relate to both social and environmental issues. These were the increased light hearted nature of the group (social), more relaxed environment of the group (social), and enhanced organisation of the group (environmental).

Figure 21: Enhanced positive changes to the social environment – continuation theme for group walking



4.4.2.4.1. Increased light-hearted nature of the group

The continuation phase saw an increase in the light-hearted nature of the group and is strongly linked to changes in social interactions and conversations. The group environment was considered by many participants, by the time attendance had reached the continuation phase, to be more fun, with a more 'jokey' atmosphere and more laughter and 'banter'. This is described by a participant in Fife as : "A group that's up for a laugh and a joke and the crack and the banter." Similarly, the importance and presence of humour was identified by many participants as a great benefit of the light-hearted nature of the group. During the focus groups, there was a lot of shared jokes and laughter which very much reflected this sub-theme, as demonstrated by the exchange between two participants at the East Lothian focus group:

> Walker a) Last year I had two nasty falls, but the minute I felt fit enough, I knew that I was able to come back and it would still be the same group, you know which is nice.
>
> Walker b) But if you'd been sober when you fell, you wouldn't have hurt yoursel [group laughter].
>
> Walker a) Well, one of my falls was at 9 o'Clock in the morning, and I hadn't even had my breakfast! [group laughter].
>
> Walker b) Was that you just getting home then [after a night out]? [Extended group laughter]

The laughter and fun experienced at the groups was a real expression of extreme enjoyment and fun for many participants, as described by a walker in Edinburgh: "I can laugh with all of the group, no problem at all coz it's all fun."

4.4.2.4.2. More relaxed environment of the group

The more relaxed environment is a side benefit of the enhanced 'banter' and 'jokey' atmosphere in the group experienced during the continuation phase of walking. With the change in conversations and social interaction, participants become more settled into the group. The light-hearted conversations, jokes and humour set the tone for a more relaxed and fun environment generally.

4.4.2.4.3. Enhanced organisation of the group

In relation to the continuation phase, many participants spoke about the opportunities all of the groups took in exploring further afield. This was often appreciated by participants who felt they would not be able to explore such locations on their own, as explained by an Edinburgh participant:

> There was a chance to go on a wee mini trip up the Pentlands [hills] and I had never been up the Pentlands because I don't drive. But there was a mini bus laid on and I loved it. It was one of the best days for me.

Another aspect of enhanced organisation was a growing confidence in going further afield with other walkers due to both an enhanced level of fitness and feeling of confidence. One participant from Glasgow described this as: "Things [feelings of confidence in the continuation phase] are reinforced and get stronger. You feel less nervous…and maybe get a bit more adventurous. 'Why don't we try this, different routes'." Similarly, aspect of confidence relates to a growing sense of feeling safe whilst walking with others within an organised walking group, expressed by an Edinburgh participant: "I wouldn't have gone to the Pentlands on my own. It's great."

4.5. Discussion

The WE:ROASE study had two specific aims. The first was to identify and understand the social factors experienced by older adult group walkers during the initiation phase of group walking. The second aim was to identify and explore whether important social factors change, or stay the same during the continuation phase of group walking. This discussion

section has been compiled in accordance with the two specific research questions devised to address and answer the two aims of the study. This section also considers how these findings relate to broader relevant literature, consider the strengths and limitations of this study, and also the practical implications of the findings.

4.5.1. RQ1: Which social environmental aspects or experiences were important to you during the initiation period of walking?

The themes identified as important during the initiation phase of walking were experience of social support; seeking social connections; opportunities to extend links with the community; and the positive nature of the social environment. The first three themes were closely aligned to the social environmental definitions depicted by McNeill et al. (2006). The fourth theme entitled the positive nature of the social environment incorporated sub-themes which were also strongly linked to some of the McNeill et al. (2006) dimensions.

4.5.1.1 Experiencing social support

Experiencing social support was identified by participants as especially important during the initiation phase, both in terms of receiving support and experiencing satisfaction in the ability to provide support to others. The timing of social support was also identified as important during the initiation phase, and often crucial in the pre-joining phase. The support provided by a friend, or even the walk leader, in the original invitation to join often made the difference between starting to walk with the group, or never starting at all. Many of the participants in the study lived alone, or were experiencing significant changes to their personal circumstances such as bereavement or retirement. This had led to some participants feeling isolated, with a diminished social network, resulting in a loss of confidence. The support from others provided an important bridge to greater social inclusion. Some participants identified that if they had not felt welcome on those early walks, they would likely have stopped attending. Once established, the sense of support from others encouraged ongoing attendance, engendering a feeling of being waited for. This in turn led many participants to reciprocate by letting it be known they were also

looking forward to seeing fellow walkers each week. Consequently, a mutual circle of support began to form within the initiation phase.

The elements of social support within the WE:ROASE study are echoed within existing older adult walking and PA literature. Being introduced and supported by others to walking groups was an important feature in many studies (nguyen et al., 2005; Nies & Motyka, 2006; Thorup et al., 2016). Some participants recognised that if they had not been encouraged to start by a doctor, a friend or the walk leader, and if support had been lacking in early attendance, ongoing engagement was unlikely (Duncan et al., 1995b; Kassavou et al., 2015). In support of this, an important point emerging from the initiation phase is the fragility of pre and early attendance (Prins et al., 2016). There is a recognition of the difficulty in encouraging certain hard to reach populations, such as socially or financially disadvantaged people, to take part in such group initiatives within the community (Ball et al., 2017; Kwak et al., 2006; Prins et al., 2016). As such, there is a need to seek out people displaying reticence and openly invite them to take part. Other group walking literature has identified that participants consider the joining process daunting (South et al., 2017). There were two specific factors which resulted in joining anxiety within this study: being able to complete the walk, and feeling intimidated joining an existing group of well- established participants, especially when there was no prior connections with existing walkers (South et al., 2017). Issues that facilitated joining the group were identified as having friends or family to join with, and the friendliness of the walk leader and the group generally (South et al., 2017). Being engaged in conversation in the early days of walking was also considered very helpful for ongoing attendance. This literature is very in keeping with feedback from WE:ROASE participants. The importance of befriending and friendly conversation from the very beginning are essential in ensuring that unless you start walking, and stay walking in the early weeks, you never get to continue is an important, and is key aspect of participation (Adie et al., 2008; Markland & Ingledew, 2007; South et al., 2017).

4.5.1.2. Seeking social connections

Seeking social connections was also an important theme during the initiation phase of group walking, and was strongly linked to experiencing social support. Many of the

participants in the WE:ROASE study explained they were seeking opportunities to meet new people and enjoy company and conversation. This was often because they had experienced life changes such as bereavement, moving location, reduced capacity of family members, or retirement. As such, they were experiencing shrinking social networks, and in some cases, a sense of growing isolation or loneliness. The friendliness demonstrated by group members, both prior to joining and also in the earliest weeks of walking, were greatly appreciated by new walkers and encouraged ongoing attendance. Within the literature, these experiences are well documented, with groups such as walking groups providing a buffer to potential isolation and loneliness (Capalb et al., 2012; Duncan et al., 1995b; Mehra et al., 2016). With the susceptibility of older adults to diminishing social networks and shared living, opportunities to replace levels of companionship in a shared group activity seem to be particularly appreciated by older adults (Nies & Motyka, 2006; Normansell et al., 2014). Unfortunately for older adults, they experience greater loss of family and friends to nursing home locations or bereavement, than other age groups (Mehra et al., 2016)

Similarly, walking with others of similar backgrounds and age enhanced the sense of companionship and belonging. The variety and extent of conversations experienced during the initiation phase of walking facilitated a sense of connection and commitment to the group. In joining the group, they were immediately benefitting from conversations relating to the scenic walking routes, and discussions about daily life such as helpful trades people and helpful community updates. There was also a clear appreciation of companionship both during the walk and post walk refreshments, where discussions and light-hearted chat could continue and develop, nurturing the development of friendship. Such developing friendships were more likely to flourish due to a shared culture, background and age. The enjoyment of walking with others from similar backgrounds and age is also well documented within the literature (Caperchione, Mummery, & Duncan, 2011; Grant et al., 2017b; Ingram et al., 2009; Leung et al., 2014). Feeling an immediate connection during the initiation phase of walking or group PA due to shared culture or life experience is a positive indication for ongoing attendance (Dunlop & Beauchamp, 2013; Leung et al., 2014)

For many WE:ROASE participants, opportunities for new social connections were greatly enhanced by the range and variety of conversations within the group. This was especially

the case where their circumstances had changed, and they had less social interaction within their existing circles. Many participants found conversations during walks were continued and extended during the refreshment phase of the walk. Within the relevant literature, the opportunity to engage in a variety of conversations is often linked with the need to seek social interactions due to diminished social opportunities (Capalb et al., 2012). In keeping with the WE:ROASE walkers, the literature identifies the importance of the refreshment element of the group walk, and how rituals and cultural norms reinforce the sense of feeling connected and a part of a group (Dunlop & Beauchamp, 2013) . Similarly, the enjoyment in conversations around the flora and fauna experienced during walking experienced by the WE:ROASE participants is replicated in the walking literature (Grant et al., 2017a; Killingback et al., 2017).

4.5.1.3. Opportunities to extend links with the community

Opportunities to extend links with the community is also linked to the growing need of some older adults to halt the drift towards social isolation. Many older adults in this study had experienced loss of contact with the community as a consequence of retirement or other changed personal circumstances. As such, a specific drive to re-establish links with the immediate community was a popular reason for joining the group. Many participants were uninformed about the extent of social opportunities in their area, and joining the walking group opened many additional community doors for them. The older adult walking and PA literature has a mixed response relating to extended links to the local community. Some groups extended walking routes into the wider community (Carrapatoso et al., 2017; Ingram et al., 2009). However others contained their sense of companionship mostly to the locale and specific time of the group walk (Dattilo et al., 2013; Duncan et al., 1995b; Taylor et al., 2003). Increased age within the older adult age group, and living independently may explain the minimisation of extended links into additional activities within the community. Similarly, having walks within the locale can be a real bonus for some participants who do not wish to travel beyond their local neighbourhood (Grant et al., 2017a). Although most of the relevant literature identifies that older adults look for new social contact opportunities when they join a group, one study reported that older adults at their stage of life are not looking to add to their social networks (Fanning et al., 2011). Therefore, basing walking

groups in local neighbourhoods, where some familiarity is possible, may be another good reason for local, community based initiatives. Within the literature, some group walking incorporated both by having regular local walks, but adding occasional further afield locations (Carrapatoso et al., 2017; Grant et al., 2017a)

4.5.1.4. The positive nature of the social environment

The positive nature of the social environment is also strongly related to the other themes linked to initiation. The enjoyment of the friendly, welcoming nature of the group is heavily inter-connected with the initial desire to seek friendliness and support from others. With friendly people comes a friendly atmosphere, often depicted as light-hearted, full of humour and 'banter'. That sense of 'jokey' light-heartedness was discussed and appreciated by many WE:ROASE participants within this study, something they identified as a natural side effect of their community culture. This 'jokey banter' was demonstrated during all of the focus group discussions and conversations. The sense of friendly welcome and light-hearted atmosphere was especially appreciated in the early stages, with some participants commenting that such an environment encouraged ongoing participation. According to Dunlop & Beauchamp (2013) the 'jokey', fun-poking 'banter' was especially appealing to a men's group. Much of the nature of the 'banter' is wrapped up in the cultural humour of the communities where the group activity is based (Chiang et al., 2008; Dunlop & Beauchamp, 2013). Another important sub-theme was the relaxed nature of environment, and also the benefits of having others organise activities. Ironically, the relaxed nature and lack of pressure to attend engendered a desire to attend regularly amongst participants in this study. Within the relevant literature, having others organise activities, taking pressure off being involved was an appealing feature of group walking (Grant et al., 2017a; Killingback et al., 2017).

4.5.2. RQ2 Did the important social environmental aspects identified during the initiation phase change or stay the same during the continuation phase of walking in the group?

The themes identified within the continuation phase are enhanced experiences of social support; a greater sense of social connectedness; an enhanced sense of community and

enhanced positive changes to the social environment of the group. In relation to the McNeill et al. (2006) definition of social environmental factors, the themes defined within the continuation phase are also closely aligned, in keeping with those defined within initiation. This is because all of the themes within the continuation phase are enhanced versions of themes identified during the initiation phase. Although similar, the continuation themes are defined by participants as a stronger quality of experience.

4.5.2.1. Enhanced experience of social support

Enhanced experience of social support was expressed in terms of both receiving and providing support to others, as observed within the initiation phase. However there is a perceived shift during the continuation phase in the nature and intensity of the social support received and given. For WE:ROASE walkers, a particular type of enhanced received support revolved around ill-health or time away from the group due to personal circumstances. Due to established levels of support developed during the initiation phase, participants appreciated the support to return after illness or circumstances such as bereavement. The ability to return to the group only for refreshments, prior to being well enough to resume walking, was significant. Within the literature, social support is recognised as one of the most important social factors to induce maintenance of physical activity (Mehra et al., 2016; Nies & Motyka, 2006). According to Capalb (2013), returning to a walking group following a period of illness is primarily driven by the desire to return to friends within the group. In terms of supporting others, walking with others and sharing life circumstances, this results in thinking about others and not yourself, as well as realising that life can be more challenging for others (Grant et al., 2017b; Killingback et al., 2017). In relation to health specific support, it is also recognised that the shared rapport that develops from sharing experiences and support with others who suffer from the same health condition provides a complete bonding experience (Donovan & Kennedy, 2015; Green & Miyahara, 2007).

4.5.2.2. Greater sense of social connectedness

Greater sense of social connectedness was strongly linked to enhanced social support as echoed within the initiation phase. In this case, a deeper sense of friendship and

connection enhanced social support and experiencing mutual support in terms of health and age. The aspects of connectedness are also very inter-linked with other factors as detailed below:

4.5.2.2.1. Development of friendship

Development of friendship for many WE:ROASE participants, the friendliness seen in the initiation phase seems to develop into fully fledged friendships, which in turn leads to happiness and enhanced social connection. A key factor in this process relates to the opportunity to become familiar and friendly with all members of the group. Another important aspect of the development of friendship is the compatibility of backgrounds, shared cultural experiences and understanding in terms of age and health status. Such enhanced connections allow for the blossoming of specific friendships and a sense of being understood. The result of this type of enhanced friendship moved beyond the boundaries of the walking group itself, into separate and multiple excursions within and beyond the community, leading to life friendships. Within the literature, there is a recognised strong link between the development of deeper connections, bona fide friendships and maintenance of activity (Capalb et al., 2012; Grant et al., 2017b; Killingback et al., 2017). This is explained by the sense of happiness it creates within participants as deeper friendships occur, especially with like-minded people (Capalb et al., 2012; Grant et al., 2017a; Kassavou et al., 2015; Killingback et al., 2017). The knock on effect of participants expanding their friendship and social activities beyond the bounds of their walking groups is also acknowledged (Capalb et al., 2012). However, some older adult walking group literature identifies that social opportunities extending beyond the walking group are unlikely or minimal, such as the Duncan et al. (1995) mall walking research. Mall walking attracts walkers from varying locations, which may minimise the ease and desire for participants to meet beyond the shopping centre locations.

4.5.2.2.2. The nature of conversations

The nature of conversations were important within the initiation phase and this became even more important during the continuation phase for WE:ROASE walkers. Conversations were seen to become more in-depth, with topics and circumstances included in

conversations that would not have taken place before the degree of friendship and companionship had become enhanced. It is also understandable that participants feel comfortable disclosing personal information and situations relating to social and health circumstances once friendships become established, and support for health and age conditions begin to manifest. A key aspect of the changing nature of 'chat' relates to the opportunity within the continuation phase to become comfortable and friendly with all members of the group, facilitating a wide range of conversations dependent on fellow walker interests. The variety and range of conversation topics was especially enjoyed. This finding is also strongly supported within the literature. According to Grant et al. (2017a) some participants revelled in the prospect of speaking to participants about everything and anything. Similarly, Grant et al. (2017a) identified that some walkers enjoyed the opportunity to have 'geeky' conversations with certain members. The opportunity to have in-depth and mutually supportive conversations regarding health and age related problems proved very beneficial for many participants (Duncan et al., 1995b; Killingback et al., 2017). These conversations enhanced the sense of connection, compatibility and degree of intimacy with fellow walkers (Grant et al., 2017b; Killingback et al., 2017).

4.5.2.2.3. Feeling valued/sense of loyalty

Within the themes identified for continuation phase, there was a strong link between the changing nature, developing friendship, conversations and ultimately experiencing a sense of feeling valued for participants in the study. With the changing nature of conversations, leading to a building of rapport and full-blown friendship, comes a growing sense of feeling valued and loyalty to the group. Many participants spoke of the walking group being a regular and permanent fixture of their week, where they enjoyed the company of their walking friends, almost described at times as an extended family. Their degree of togetherness, sense of identity and belonging to the group is the result of such friendships developing around shared experiences and community. There is also evidence of similar social experiences within the older adult walking and PA literature. After a long period of attendance, a sense of togetherness and belonging was observed in older adult studies (Dunlop & Beauchamp, 2013; Killingback et al., 2017). With the shared identity, comes a level of commitment and trust (Dunlop & Beauchamp, 2013; Grant et al., 2017a). The cultural element to shared identity is also identified in the literature as an important factor,

especially in establishing a sense of family (Chiang et al., 2008; Dunlop & Beauchamp, 2013). As such, a sense of feeling valued results from being listened to and supported, which in turn engenders the reciprocal act of listening and support (Grant et al., 2017b).

4.5.2.2.4. Increased confidence

With the onset of continuation, WE:ROASE participants talked about becoming more familiar with participants and being more at ease. This in turn boosted participant confidence in how they interacted with other participants. The familiarity reduced the fear of causing offence, and encouraged some participants to be more open and engaging with more reserved participants. Similarly, participants who identified themselves as more shy or reserved recognised that ongoing attendance boosted their confidence to speak and interact more openly with others. As such, many participants expressed a sense of confidence in their ability to form and successfully engage in friendships and companionship during the continuation phase. This confidence led to the ability to provide support and friendliness to new starts, and in some cases, a desire to take on a more formal leadership role, even training to become a walk leader. There was a sense with some participants of coming full circle within the group, once they became confident and secure in their position in the group. When they joined the group, others welcomed them in, and role modelled taking part in the group. With the onset of continuation, many participants recognised that they were in a position of confidence and longevity to welcome in new starts and show them the ropes as others had for them. This sense of growing confidence is also expressed within the older adult walking literature where familiarity leads to shared walking experiences, shared refreshment experiences and a developing confidence in their compatibility with others (Duncan et al., 1995b; Killingback et al., 2017). However, there is little discussion in the older adult walking literature about the progression from participant at walking groups to a leadership position either formally or informally.

4.5.2.2.5. Happiness/well-being.

It is not surprising that the culmination of enhanced friendship, more in-depth and varied conversations, feeling valued and a sense of belonging and growing confidence should result in enjoyment and happiness. Within the WE:ROASE study, the shared laughter and

collective sense of togetherness was evident in all of the focus groups. Some participants spoke openly of the happiness and sense of well-being they experienced as a result of the growing friendships and companionship they shared with other walkers. This sense of happiness and well-being is also documented within the relevant literature. In some instances, the importance of happiness and enjoyment are documented as one of the most important factors depicting continuation (Capalb et al., 2012; Grant et al., 2017a; Mehra et al., 2016). There is also evidence of the sense of happiness and well-being originating from walking and talking together (Doughty, 2013; Morris et al., 2019). This sense of happiness and well-being has been described as a consequence of shared walking which in turn creates a sense of supportive sociability (Doughty, 2013; Morris et al., 2019). According to Doughty (2019), the walking movement, which creates a shared rhythm, mirrors a sense of being in step with fellow walkers. The opportunity to walk and talk, striding or strolling together in step, creates a shared movement with others, without having to directly face participants. This provides an ideal opportunity to share personal stories (Doughty, 2013; Grant et al., 2017b). The natural silences outdoor walking facilitates, together with the sharing of conversation and striding together, can instigate a sense of happiness and well-being (Doughty, 2013; Grant et al., 2017b; Morris et al., 2019).

4.5.2.3. Enhanced sense of community

Although experiences within the community are important to both the initiation and continuation phases within the WE:ROASE study, the continuation phase contained elements which extended beyond the immediate neighbourhood. Another important aspect of the continuation phase related to the growing sense of community within the parameters of the walking group itself. The growing sense of a shared identity between participants, enhanced by shared experiences, neighbourhood and age and stage of life resulted in a sense of shared community within the group. The meeting points for walks and refreshment locations were in many instances within the community hub. The familiar sense of meeting, walking and enjoying refreshments together within the same location fostered a rhythm within the group of walkers, cementing the culture and customs of the group. Many participants in the study observed that the refreshment break enabled them

to speak in-depth to everyone in the group, and not just to those who walk at a similar pace.

Similar experiences are also documented within the literature. The development of a sense of togetherness within the group has been described as a community, with the over-arching interest of group walking (Duncan et al., 1995b). The communal shared experiences of meeting beforehand and sharing refreshments together, often within the area of walking is recognised as important to the defining aspect of the group (Capalb et al., 2012; Prins et al., 2016; Thogersen-Ntoumani et al., 2017). The refreshment break as part of this custom is recognised as highly important to the sense of ritual and cementing of the group cohesion. For many participants, the chance to really speak to everyone in detail only occurred once back at the refreshment base (Grant et al., 2017b). In some studies, the moments that define community togetherness happened during the refreshment breaks, including shared customs such as birthdays and holidays, usually involving cake or other special customs (Duncan et al., 1995a; Dunlop & Beauchamp, 2013). With some groups, there were clubs within clubs during refreshments such as 'the boys' club' in the Duncan et al. (1995a) mall study. For other groups, the smaller mini walking teams who often walked at the same pace, came together as one big community at the break (Grant et al., 2017a; Killingback et al., 2017). As such, some studies recognised the importance of building in refreshment breaks and funding them (Prins et al., 2016; Thogersen-Ntoumani et al., 2017).

Continuation within the WE:ROASE study also saw the expansion of walking into the wider community. With the growth in confidence and competence, the groups were interested to explore wider parts of the community. This involved taking public transport further afield and in some cases walking back to the local neighbourhood. Distances became less intimidating for walkers during the continuation phase, especially walking with the group for company and safety. The literature also highlights similar issues. The desire to undertake walks further afield during the continuation phase is well documented (Grant et al., 2017a; Ingram et al., 2009). For those walking groups based in residential settings, feedback from participants identified that they would enjoy the opportunity to walk beyond the confines of the home (Taylor et al., 2003).

4.5.2.4. Enhanced positive changes to the social environment of the group

Enhanced positive changes to the social environment was another large theme within the continuation phase of walking, and increased in quality and intensity from its initiation counterpart. This theme almost consolidates all of the key aspects of the three prior themes within the continuation phase to create an ideal social environment for a walking group to operate within. It is not surprising that the development of full blown friendships, growing confidence between participant interactions and growing in-depth conversations, results in the increased light-hearted nature of the group. The group walks and focus groups undertaken for this study exuded a light-hearted atmosphere full of relaxed and 'jokey' conversations, minor teasing between participants and a great deal of laughter. This was discussed within the focus groups as 'Scottish banter', with a strong reliance on cultural humour and characteristics. Part of the relaxed nature related to the organised nature of the group, where most participants could turn up and take part without worrying about having to organise walks, as others were responsible for this. Participants of the WE:ROASE study also commented on the relaxed confidence and organisational skills exuded by walk leaders. Participants felt confident and safe to walk to more distant places in the organised care of the walk leader. The need for, and appreciation of, safety was especially valued by most participants, especially amongst the female walkers.

Many of the characteristics depicting the enhanced positive nature of the social environment are apparent within the older adult walking and PA literature. The enhanced light-hearted nature of interactions is well documented and is strongly linked to the psychosocial gains of sense of enjoyment and fun experienced (Duncan et al., 1995b; Dunlop & Beauchamp, 2013; Grant et al., 2017a; Killingback et al., 2017). According to Dunlop & Beauchamp (2013), the light-hearted teasing often resulted in tears of laughter rolling down cheeks. Many of these experiences were accompanied by rituals and customs relating to birthdays and holidays (Duncan et al., 1995a; Dunlop & Beauchamp, 2013). The relaxed environment also reduced the pressure on participants to attend every week, although many chose to attend as regularly as possible (Capalb et al., 2012; Killingback et al., 2017). Many participants within this phase of continuation did not take themselves or the group too seriously (Dunlop & Beauchamp, 2013; Killingback et al., 2017). However,

safety was taken very seriously by many participant, who appreciated the ongoing opportunity to walk or exercise with others to negate any potential fear (Duncan et al., 1995b; Grant et al., 2017a; Mehra et al., 2016; Prins et al., 2016). The overall effect of the walking, combined with fun and light-hearted refreshment breaks has been described as like a form of medicine, therapeutic healing or humanised healthcare (Dunlop & Beauchamp, 2013; Grant et al., 2017a; Killingback et al., 2017; Morris et al., 2019). Similarly, Grant et al (2017a) described the whole experience of walking with a group as greater than the sum of its parts. Grant et al (2017b) also described the experience as a sense of liberation through the freedom of being able to interact with fellow participants without an agenda or rulebook (Grant et al., 2017b).

There is no doubt that group walking in this age group can provide an ideal social environment to foster a positive sense of social well-being (Duncan et al., 1995b; Grant et al., 2017b). This environment has been described as a therapeutic landscape which combines the place of activity together with the inhabitants of the place of activity (Doughty, 2013; Grant et al., 2017b). Striding together in a supportive landscape, with the friendliness provided by fellow walkers and walk leaders creates an ideal social environment, inducing a sense of happiness and well-being (Doughty, 2013; Grant et al., 2017a; Morris et al., 2019). Such a positive social environment creates a sense of travelling with a person through both the physical environment and also travelling with participants through their lives (Doughty, 2013; Grant et al., 2017b). These shared physical and social spaces induce a sense of therapy, leading to healing and enjoyment (Doughty, 2013; Grant et al., 2017a; Morris et al., 2019).

4.5.3. Contribution to knowledge.

The first research question for this study aimed to identify and understand the social factors experienced by older adult walkers. In a contribution to the literature, this study identified that there were four themes that closely matched the social environment dimensions identified in the McNeill et al. (2006) systematic review as discussed in the results and discussion sections. The McNeill et al. (2006) framework listed key dimensions within the social environment, and it could be a useful framework for research looking at

the social environment, which is currently vaguely defined. In relation to the second research question, the WE:ROASE study contributed to the literature by identifying that themes within the continuation phase are enhanced versions of their initiation counterparts. Although themes were similar between phases, participants described a stronger quality of experience in the continuation phase.

Another contribution to the literature relates to the findings, that within both the initiation and continuation phases of the WE:ROASE study, there was an inter-connection between themes. In addition to this, there was also an inter-connection between the initiation and continuation phases. Figure 22 (see below) illustrates the inter-connections between the two phases explained pictorially. The top box within the figure called initiation 1 identifies the key social environmental factors that were influential in encouraging older adults to join the walking group. Some of these factors related to changing personal circumstances and a desire to address a growing sense of isolation and loneliness. Some also related to the immediate sense of welcome, both before joining in the form of befriending, and in the immediate few weeks of walking. Such factors that persuade older adults to seek out a group to walk with are documented in the top box. The right-hand box within the figure entitled initiation 2 depicts the important social environmental factors that develop and progress once participants are beyond thinking about joining/ the first few weeks, and have started to walk with the group. Although still within the initiation phase, this box identifies the factors that encouraged participants to progress through the initiation phase. Such factors include experiencing social support and friendliness to combat isolation and loneliness, plus an attractive, relaxed and enjoyable atmosphere.

At the bottom of the figure, the box called continuation 1 identifies the key social environmental factors that are an enhancement of those experienced within initiation 2. Continuation 1 marks the first stage of continuation. At this point, participants experienced the flourishing of friendships. This encompassed the strength and depth of friendships with multiple members during contact through walking and refreshment breaks, in a growing relaxed, often 'jokey' enjoyable atmosphere. This aspect of continuation results in the cementing of regular attendance due to full blown friendships, enjoyment of the fun and relaxed environment and the establishment of a commitment and loyalty to the group.

During this phase of continuation, some participants begin to explore the wider community, both in terms of more adventurous walks, and group activities beyond the walking group.

The final box within the figure on the left-hand side depicts continuation 2. This phase of continuation identified the enhanced positive environment of the group. Positive practices experienced within the continuation phase included a positive sense of belonging and an identity with the group. This phase is also marked by a positive sense of happiness and well-being, due to the development of a therapeutic landscape. This therapeutic landscape is borne from the stress relieving action of shared movement of striding or strolling together. With the growth of full-blown friendships, the walking and talking side by side provides an ideal set-up for shared discussions and life stories, enhancing a sense of belonging and regard for important others in the group. A growing sense of happiness and well-being grows from that and can result in a sense of personal healing, almost therapy. Firmly established friendships can flourish outside of the group including holidays and other regular activity, often PA related. It is also during this continuation phase that some participants decide to take on a leadership role, either formally or informally, to provide new starts with the positive experience they themselves experienced when they joined the group. Having developed a confidence in their ability to walk in the walking group environments, and confident in the ability to engage others, some participants consolidate that confidence into a leadership role.

In summary: the inter-connected nature and flow between the initiation, continuation and back to initiation phases of this study provides a unique interpretation of the impact of social environmental factors on initiation and continuation of older adult group walkers. Within the initiation phase, the positive experiences of social support combine with rewarding social connections and friendliness, together with closer links to the neighbourhood. The culmination of these inter-connections leads to the positive nature of the social environment of the walking group. Such positive social environmental experiences within the initiation phase act as a magnet, drawing participants into the continuation phase. Once within the continuation phase, the inter-connection circle starts again. The positive experiences of social support become stronger leading to the development and growth of full- blown friendships and enhanced social connections. These

enhanced friendships and supportive, rewarding connections result in further links and experiences within the wider community, and within the walking group community, almost becoming like a family. The development of such a relaxed nature of the group, full of laughter and light-hearted banter, together with greater contact within the community, the sense of belonging fully establishes. At this stage, the nature of the social environment is at its optimum, with experiences bordering on healing and providing an ideal social environmental sense of well-being. Many participants express real happiness at their time and involvement with the club. As a consequence, many members become advocates of the group, providing support and leadership for new starts, who are themselves beginning the series of inter-connecting circles.

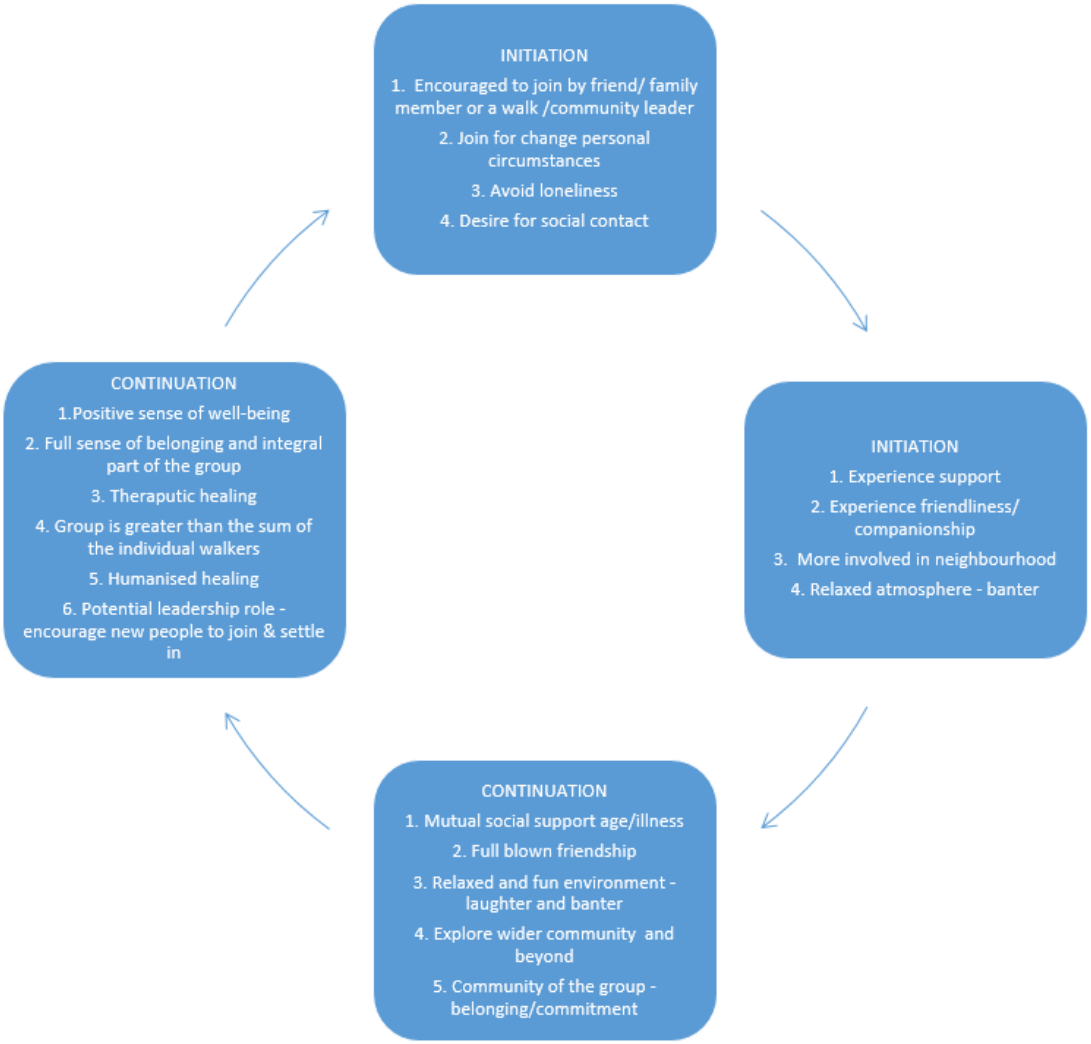
The literature for older adults who walk in groups is a fairly small body of literature. There is little, if any discussion relating to the progression cycle for some walkers who take on leadership roles, even formal walk leader roles, within the continuation phase of group walking. Some older adult walking or PA studies do relate to participants within the groups considered to have senior type positions within the groups, who are looked up to by other walkers (Duncan et al., 1995b; Dunlop & Beauchamp, 2013). However, they do not refer to the progression from new start to leadership position. They also do not link the growing enjoyment and experience of being part of the group with a desire to take on a more senior role within the group.

4.6. Strengths of the WE:ROASE study

In terms of strengths, participants within the WE:ROASE study were selected from six walking groups across Scotland including urban, rural and coastal walking. Participants within the groups had a wide range and breadth of group walking experience which they shared during the data collection stage. There was also a wide age-range between participants which ensured issues relating to young older age and older old age were represented. Similarly, there was also a good spread of abilities amongst participants which enabled the representation of views from those in robust physical health and also from those who were more frail. From a study design perspective, the WE:ROASE study adopted a robust and tested qualitative Braun & Clarke methodology, (2006), incorporating

processes to enhance rigour, such as the second researchers AN and SF adopting a critical friend approach to data analysis to clarify and check for understanding in relation to the analysis process and theme creation and naming. During data collection, the first researcher NL, met and walked with participants and walk leaders prior to data collection. This enabled a development of rapport with participants prior to undertaking data capture. Participants had already begun to share their views and ideas relating to their social reasons for starting and continuing to walk with their group. This provided a helpful segue into data collection, and enhanced the quality of the data collected.

Figure 22: The inter-connecting cycle of the initiation and continuation phases of WE:ROASE study



4.7. Limitations of the WE:ROASE study

In terms of limitations, the WE:ROASE study primarily consisted of participants who had successfully reached the continuation phase of walking with their groups, although there were a few participants who were still in the initiation phase. Due to this, there was no input from those who had decided not to continue walking with groups, so the study contained positive experiences of group walking for those specific older adults it worked for. Drop and lapse/re-lapse are a feature of initiation and continuation literature. Therefore, future research recruiting participants who dropped out of walking groups would be valuable. Future research would also be useful to test the cyclical initiation to continuation figure created for the WE:ROASE study within a longitudinal study to track both continuers and those who drop out, and possibly re-start. A further limitation is that the WE:ROASE study took place in the Summer months of June and July 2019, when the weather was particularly pleasant. Participants attending on these days may well have been absent on less favourable weather days. Such positive responses from most participants may have been less favourable from participants on a bad weather day.

4.8. Practical implications

Group walking can be promoted to this age group as a helpful way to meet new people, maintain and extend links into the community and potentially provide opportunities to support and lead groups either informally or in a trained capacity as walk leaders. One of the most important aspects of group walking appears to be the accompanying breaks. These gatherings over shared refreshments seem to cement the social connections and friendships, allowing all participants to get to know each other whatever their walking pace. These refreshment stops are also pivotal in providing a half-way house for returning walkers who have been forced to drop away due to ill health or accident. Providing initiatives that offer free refreshments would be advantageous to allow the full social experience that helps to cement continuous walking take place. Free walking groups also enable participants from all socio-economic backgrounds to benefit from group walking. There is a recognition in the group walking literature that group walking successfully recruits white middle-class women (Ball et al., 2017; Foster et al., 2011). Group walking recruitment has also identified that successful recruitment tends to focus on numbers, and

not necessarily the hardest to reach groups (Ball et al., 2017; Kwak et al., 2006). The WE:ROASE study was dominated by female walkers, but with the most reduced activity levels within the older adult population, it was reaching an 'at risk' group. The WE:ROASE study did not measure socio-economic status, but costs in retirement was raised at some of the groups, the opportunity for free walks and on some occasions, free refreshments afterwards was an enabler for some participants.

The WE:ROASE study also identified the importance of the pre-contemplation phase of group walking, especially in relation to the trigger it often gave to the decision to join and initially walk with the group. One implication could be to train some existing walkers in a buddy type role, who look out for and engage with new starts to ensure they feel properly welcomed and comfortable. Another important finding of the WE:ROASE study is the important cyclical inter-connection between the two identified phases of initiation and the two identified phases of continuation. Another important finding from this study related to the importance of the walk leader and their role as a leader with responsibility. As such, the need to regularly train potential new walk leaders is important. However, it is important to look for new walk leaders, without putting any pressure on existing walkers, to take a more responsible role. Likewise, another important finding highlighted the development of social contact beyond the walking group. As a result of this, more activities could be stimulated, such as trips to the cinema (on senior citizen discount days) or becoming involved in other forms of PA. Added to this, there is also an important link between the second initiation phase and the first of the continuation phases, where the initiation phase sets up the start of the continuation phase. In terms of similarities and differences between the two phases, there are more similarities than differences. However, the quality and extent of social environmental factors are enhanced within the continuation phase.

5. Conclusion

5.1 Summary of this thesis

The overall aim of the thesis focused on using the ecological framework to enhance the understanding of why older adults start, then continue to walk with PfA groups. In order to achieve this aim, the thesis had three objectives, each aligned with a specific study summarised below. This mixed-method thesis has made an original contribution to knowledge by synthesising existing literature, using theory to quantitatively examine the role of motivation in influencing walking behaviour, and undertook a qualitative study to provide rich insight into the social environmental factors that influence walkers' experiences.

5.1.1 Qualitative systematic review – why do older adults start and continue to walk in groups?

Study one was designed as a qualitative systematic review to identify the individual, social and environmental factors influencing the initiation and continuation phases of older adult group walking. Within the 14 included studies, the review found that group walking is globally popular among older adults within their 60s to 80s, in groups as far afield as Asia, America and Europe. It is evident that multiple factors influence both initiation and continuation and these are often inter-linked. Both individual and social factors appear to be more influential than environmental factors during both phases. Further, although individual and social factors are present in both phases, the quality of these factors is enhanced over time e.g., mental health benefits such as well-being and more energy develop and friendships are strengthened. The review also identified that the multiple individual, social and environmental factors related to the initiation and continuation of walking appear to be perceived to older adults as beneficial to physical, mental and social health.

This study makes a contribution to knowledge by being the first to synthesise the existing qualitative research on older adults in walking groups. The findings extend our knowledge

by providing detailed insight into participants' experiences, and highlighting that individual, social and environmental factors have a role, but individual and social factors appear more influential. By considering and comparing both initiation and continuation phases, the study has made an important addition to the literature by providing insight into how factors are qualitatively different at different stages, and particularly enriched in continuation.

5.1.2 The quantitative WE:ROAM study: Walking Experiences: Researching Older Adult Motivations

Building on the findings from the systematic review, study two was created to focus on a key factor from the individual context of the ecological framework. Motivation was identified as an important factor within the systematic review, especially in relation to continuation. Motivation is also a modifiable factor which can be influenced by behaviour change. Therefore, study two, informed by the well-established motivational theory SDT, was undertaken to identify if motivational changes in walkers took place between the initiation and continuation phases of older adult group walking. The SDT behaviour change pathway hypothesises that over a period of time, an autonomy supportive environment (stage 1) leads to need satisfaction (stage 2) leads to the internalisation of behavioural regulation, producing more self-determined type motivation (stage 3) leads to increased walking and vitality (stage 4). The WE:ROAM study had three specific research questions which examined the SDT behaviour change pathway from stages 2 to 4 within an older adult walking environment. Question one aimed to identify if there were changes to need satisfaction, behavioural regulations, vitality and walking outcomes between time point one (initiation) and time point two (continuation). Question two aimed to identify relationships between changes in these variables from time point one and time point two. If no changes were evident in addressing question one, making question two redundant, then a third question aimed to identify the relationships between the variables at one time point (initiation).

In this study, 61 participants were successfully recruited, and 49 retained at time point two (over 80% retention). Unexpectedly, the findings did not align with the SDT behaviour change pathway as there were no meaningful or significant changes in need satisfaction, behavioural regulations and vitality between time point one and time point two. There

were also limited changes in walking outcomes. It may be that the SDT behaviour change pathway is not applicable in this setting, or alternatively these findings may relate to the profile of the PfA older adult walkers who joined the group with already high levels of need satisfaction, adaptive behavioural regulation and vitality. Another explanation could be that the anticipated changes did in fact take place, but prior to the collection of data at the first time point. For example, walkers had been walking for an average of nearly three months at the point of first data capture. In relation to the walking data, lack of changes to the need satisfaction, behavioural regulations and vitality means that limited changes in walking are also not surprising. There were also concerns with the CHAMPS measure of walking used for WE:ROAM.

In relation to question two, as all but one variable recorded no change between time points, question two became redundant. However, question three examined the cross-sectional relationships between need satisfaction, behavioural regulation, vitality and walking outcomes during the initiation phase. The findings from this question do partially support the anticipated relationships reflected in the SDT pathway, and could suggest that SDT is applicable but the expected changes were not captured due to the reasons articulated above. Specifically, from the three psychological needs autonomy appears to be most strongly related to behavioural regulations. There was some indication that high levels of autonomy was related to higher quality forms of motivation, likely to be sustaining. Competence and relatedness appear to be less important, with only two and one significant (small-medium) relationships each with behavioural regulations, respectively. Relatedness need satisfaction was positively correlated with vitality.

This suggests that those who experienced a sense of being valued by important others were more likely to experience high vitality, expressed as high energy and enthusiasm of spirit. Similarly, there was a positive significant relationship between vitality and intrinsic motivation, and a negative significant relationship between vitality and external motivation. These findings provide some support for the internalisation of behavioural regulations resulting in increased vitality, with high levels of intrinsic motivation related to high levels of vitality and the opposite for external regulation. There were some, but few, relationships evident between the SDT variables and the walking outcomes, which is

contrary to the expected SDT pathway. It is possible that the CHAMPs measuring instrument was not sensitive enough to detect differences in walking.

Although the findings of this study were not as expected, they do provide insight into the role of motivation on walking in groups, and particularly identify areas for future research. Firstly, the findings indicate that the walking groups may provide a particularly welcoming environment from very early on, that leads to needs satisfaction, and enhanced motivation and vitality. Further, the findings suggest that autonomy appears to be a particularly important need because it has the strongest relationships with behavioural regulations. It also seems that the level of relatedness, provided by PfA walk leaders and some fellow walkers, can perhaps induce high levels of vitality, which is also linked to continuation in the literature.

5.1.3 Walking Experiences: Researching Older Adult Social Experiences – The WE:ROASE study

Also building on findings from the systematic review, the third study focused on social factors which were identified as important to both the initiation and continuation phases of group walking. This was the first study to qualitatively examine the social experiences of older adults in walking groups. The study was qualitative in design and featured six walking groups. Five focus groups (n=39 participants) were undertaken, with one focus group incorporating two walking groups. The study had two specific aims, to identify and understand the social factors experienced by older adult group walkers during the initiation phase of walking. The second aim was to identify and explore whether important social factors identified at initiation change, or stay the same, during the continuation phase. The main findings indicated that the social experiences of older adults could be clustered into four areas relating to the experience of social support; seeking social connections; opportunities to extend links within the community and neighbourhood; and the positive nature of the social environment. Most of the themes identified in the initiation phase were similar to those identified within the continuation phase. However, the continuation themes had a greater focus on consolidation of factors; and an enhanced quality and development of experience from the initiation counterpart themes.

This study contributes to knowledge in two key ways. Firstly, by providing a synthesised model of the social experiences of older adults in group walking that illustrates how social factors are important at both stages, but with a development of quality of experience within continuation phase. Further, the themes identified within the initiation and continuation of group walking were broadly in step with a helpful definition of the social environment defined by McNeill et al. (2006). There is an ambiguity within the PA literature surrounding the term social environment, so the framework developed by McNeill et al. (2006) could be a useful framework to guide further social environment research in physical activity.

5.1.4 Synthesis of findings from the three studies within this thesis.

The overall aim of the thesis was to focus on using the ecological framework to enhance the understanding of why older adults start, then continue to walk with PfA groups. The three studies combined highlighted the importance and inter-connection of individual, social and environmental factors which influence older adult group walking. The social environment was also identified as important to all three studies, but the current definition of the social environment is vague. In relation to the systematic review, although the factors relating to initiation and continuation of older adult group walking are similar in both phases, each phase has a degree of some shared themes and some specific per phase, making older adult group walking phase specific. The phase specific nature of the initiation and continuation of group walking is echoed in the WE:ROASE study, where themes and sub-themes were similar, but had an enhanced sense of quality and development within the continuation phase. The differences in motivational factors between both phases of walking within the second study were minimal, however, there was some evidence to suggest that changes in motivational factors may have in fact taken place, but prior to the first data collection period.

The ecological model has been a useful framework for this thesis, and the findings of the studies demonstrate the inter-relationships between the three contexts defined within the model: individual, social and environmental. The systematic review identified that themes can run between all contexts such as happiness, safety and enjoyment, reinforcing the

importance of examining PA in multiple spheres of influence as recommended by the WHO as a systems-based approach.

5.2 Practical recommendations of this thesis

Feedback on the findings from each of the three studies within this thesis will be shared with PfA and this process has already begun. Advice and suggestions on how PfA can undertake helpful action as a result of these findings will also be recommended. Some of the intended feedback will be in the form of helpful infographics, highlighting key areas to promote and in relation to the initiation and continuation of older adult group walking. Similarly, presentations at PfA networking events, bringing together walk coordinators, walk leaders and organisations with shared interests will be undertaken by the lead researcher. Feeding back findings to walk coordinators and walk leaders within the PfA network, together with staff within the PfA organisation will be a key action.

In relation to findings from the systematic review, key findings include the high number of shared themes and sub-themes between phases. However, despite the overlap of many themes between phases, both initiation and continuation are phase specific. This is due to the mix of both shared and unique themes contained in each phase. In terms of shared factors, it will be helpful to communicate the importance of physical health issues such as the perceived need of older adults to attend groups to improve fitness, and mange health conditions. Assisting walkers to monitor fitness with measuring devices, so progress can be measured and monitored could be a helpful suggestion. Similarly, the need to achieve self-efficacy from a mental health perspective, such as developing a confidence, competence and mastery for group walking also transcends both phases. The sheer love and enjoyment are also factors for walkers in both phases of walking, so promotion of particular walks, with photographs and participant comments on how enjoyable some walks are could be a helpful promotion tool.

From a social perspective, the need for social contact, and support from fellow walkers are both important between phases. In terms of reaching new participants, buddying schemes could be set up in order to recruit older adults based within the community who are not

currently very active. From a continuation perspective, participants could be encouraged to take on a buddying role for those who are joining, providing a veteran type role for those who are established. The importance of the role of the walk leader was also highlighted, especially during the initiation phase. The expertise and ability of the walk leader to organise events and encourage people to take part was especially highlighted. These important qualities within a walk leader could be shared with them, and how their support in the earliest moments of contact and crucial first few weeks really count. The strength of the social reasons which become enhanced during the continuation phase could become a reason to promote walking groups by PfA members. Additional activities such as other PA activities such as swimming or yoga could be promoted. Other non-PA activities to enhance walkers' social connectedness, such as the cinema (often discounted for older adults on set days) could be a good suggestion. The importance of feelings of belonging as the continuation phase continues could be reinforced with waking group t shirts or similar merchandise. Similar suggestions have been made to PfA as the result of previous research observing older adult factors for starting and continuing to walk in groups (Niven et al., 2012). In terms of environmental issues, the desire for well organised and safe walking could be highlighted in promotional material. Similarly, the more adventurous walks could also be promoted, highlighting variety and differing levels of walking.

In relation to providing practical implications as a result of findings from the WE:ROAM study, the potential speed of need satisfaction, adaptive behavioural regulation and vitality needs to be shared with key staff. If the social environment is right when people join, then participants will quickly experience satisfaction in their sense of choice and control, their ability to become confident and proud of their walking, boosting higher quality motivation and vitality. Therefore, the importance of offering choice is important. This has already been identified as tricky in some instances, because group walking routes can sometimes be limited. Similarly, providing the right environment where people with differing levels of walking ability and confidence can flourish is also important. Likewise, the importance of feeling welcomed and well regarded by walk leaders and other walkers is also key to participant motivation and vitality. Another important issue to highlight is the possibility that a high number of new walkers may arrive at groups with high levels of motivation, need satisfaction and vitality already in place, and who may be very active prior to joining groups. This could potentially imply that PfA may need to consider their recruitment reach,

and whether they are reaching the most inactive, at risk older adults. The success of recruitment has been questioned by other walking intervention researchers who have suggested that numbers alone are not the best measure of success (Ball et al., 2017; Foster et al., 2011; Kwak et al., 2006). Although Foster et al. (2011) concluded in their systematic review of recruitment to walking interventions that recruitment is successful for white middle-class older women, older women none-the-less are an at risk group from a PA perspective (The Scottish Government, 2018, 2020). The systematic review within this thesis identified that walking groups are perceived to have many social benefits, so even if participants are already active, attendance may significantly contribute to their social health.

The practical implications from the WE:ROASE study reinforce those made as a result of the systematic review findings. From a social perspective, the social experience is enhanced during the continuation phase, with a perceived increase in quality of social connection. Sharing the circular figure (figure 22, chapter four) demonstrating how the initiation phase develops in two stages and then progresses into the two continuation phases, flowing back into initiation would be helpful for PfA to understand. Formalising the role of veteran walkers and how they can assist new walkers could be suggested to walk coordinators and leaders. Some walkers have no wish to become formal leaders and over-promoting this could be detrimental to those who wish to turn up and walk. However, promoting an informal volunteer buddy role for veteran members of groups may be a useful way forward. Another important finding is the benefit of meeting after walks for refreshment, which was identified from both the systematic review and the WE:ROASE study. These refreshment breaks create a level playing field for walking ability, allowing those who walk at different speeds to get to know each other during the coffee break. These refreshment breaks also provide places for returners to gather as a half-way house to returning to walking, and as such act as a useful stepping stone back to walking. As a consequence, the ongoing provision of funds for the refreshment breaks should be campaigned for and stressed as an essential component to the funding of group walks.

Taking into account the findings of all three studies, it is also important to relay to PfA that it may be helpful to garner feedback from participants who did not continue walking. This thesis was focused on those who started and stayed walking, so will reflect the findings for

those for whom the walking group format worked. However, there will be many who stopped walking, or fell away after some cycles of returning. Understanding this view point may well enhance actions for promoting future aspects of group walks.

5.3 Strengths of this thesis

This body of work, represented by these three studies, has added to the older adult specific group walking literature. As there has been no systematic review dedicated to older adult group walking, the systematic review addressed this gap. This systematic review was also the first to synthesise on this subject from qualitative studies to provide a rich insight into the reasons why older adults start and continue to walk in groups. The breakdown of findings into individual, social and environmental factors, in line with the ecological framework, also helps to provide a robust and comprehensive review of the older adult group walking literature. The identification of the three contexts within the ecological framework also helps to confirm the multiple factors influencing older adult walking and how these factors often interlink. The methodology undertaken to complete the systematic review adopted tried and tested systematic review practice (Petticrew & Roberts, 2012) including the PRISMA and PICOC guidelines.

Study two, the WE:ROAM study which aimed to understand motivational factors that influenced the initiation and continuation of group walking, was successful in recruiting and retaining participants, with over 80% retention. Part of this success related to the specific recruitment strategy recommended by a review of recruitment into walking interventions. A pilot study N = 29 tested the recruitment process, the data capture and participant tolerance for the data collection instrument. The statistical analysis of data followed the recommended non-parametric analysis tests in line with abnormal data. All data collection instruments were also validated for use.

Study three, the qualitative WE:ROASE study also had a successful recruitment strategy. This study aimed to understand the social factors linked to the initiation of group walking, and to identify if those reasons remained the same or different at continuation, also had a successful recruitment strategy. The first researcher, NL, also walked with participants prior

to data capture, which facilitated the development of a rapport with participants, and made participants more relaxed with their contributions. The data capture and data analysis process also followed robust, tried and tested qualitative methodology. Theme development was shared with second researchers AN and SF, who adopted a critical friend process, clarifying theme name and subject development.

Overall, the planning, undertaking and analysis of the three studies within this thesis were greatly supported and enhanced by the ongoing interaction and relationship with PfA. PfA were consulted with the subject and development of each study, where they providing input and content suggestions. The lead researcher had access to walkers in groups throughout the PfA network and had regular contact with the management team within the organisation. The lead researcher also had access to walk coordinators and leaders as and when required. The management team have been supportive and involved whilst ensuring autonomy for the lead researcher and the supervisory team.

5.4 Limitations of this thesis

In relation to the systematic review, the sheer volume of findings generated made it difficult to report all findings. The decision to report findings if they appeared in five studies or more was a practical necessity, but there may have been nuances as a result of limiting findings in this way. Similarly, the analysis process was not undertaken with the preferred double screening process. However, according to Shamseer et al. (2015) in their paper identifying the preferred reporting items for systematic review and meta-analysis protocols elaboration and explanation highlighted that single data extraction has not been found to considerably alter potential finding outcomes (Shamseer et al., 2015).

In relation to the WE:ROAM study, the data collection instrument for walking outcomes may not have been sensitive enough to record changes to walking outcomes. Despite being recommended by the Falck et al. (2016) systematic review on measuring tools for older adult PA, the mechanism for recording the number of hours walked was based on older adult perceptions of how much they had walked within five averages of time ranging from

under an hour to 9 + hours in five bands. This method lacks a sensitivity to detect changes in walking behaviour.

In relation to the WE:ROASE study, the participants were in the main continuing group walkers and were highly committed and complimentary about the walking group set up, running and perceived benefits. It would be interesting to undertake a similar study with those who did not continue to see if reasons for initiating and continuing to walk would appear to be the same (see future direction of research). The study also took place within the summer months when the weather, especially for Scotland, was very warm and sunny. Feedback from participants may have been less complimentary and positive if undertaken in the winter months.

5.5 future direction of research

The need to balance the findings from this study with feedback from those who do not continue to walk would provide the flipside to the starting and continuing coin. It would also be useful to assess if participants at group walks are from the hard to reach groups who would benefit the most from undertaking more PA. It is important to emphasise the need to accommodate all older adult walkers who wish to take part, as perceived social benefits are equally important to physical and mental health benefits. However, also accommodating those who are not currently meeting guidelines would be ideal, especially as walkers as found within the WE:ROAM study may start from a place of confidence and competence in walking, together with robust levels of motivation and vitality. Similarly, it would also be useful to test the dimensions of the social environment identified by McNeill et al. (2006) in order to clarify the meaning of the social environment as it is becoming an increasingly important aspect of influencing PA and walking behaviour.

Appendices

Appendix 1 – WE:ROAM study ethics approval

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1 November 2016

Dear Nicky

Title: Walking Experiences: Researching Older Adult Motivations (WE:ROAM) study

The School of Education Ethics Sub-Committee has now considered your request for ethical approval for the studies detailed in the your application.

This is to confirm that the Sub-Committee is happy to approve the application and that the research meets the School Ethics Level 3 criterion. This is defined as "applies to novel procedures, research without consent, sensitive personal data, or the use of atypical participant groups. Also projects in which ethical issues might require more detailed consideration but are unlikely to prove problematic".

You are reminded that if the research changes in anyway from that described on your application form, you may need to re-apply for approval.

Should you receive any formal complaints relating to the study you should notify the MHSE Ethics Committee immediately by email to Shona Cunningham at s.cunningham@ed.ac.uk.

Yours sincerely

S Cunningham

pp Dr Ailsa Niven
Convener, School Ethics Sub-Committee

Appendix Two – WE:ROAM information sheet for participants

Walking Experiences: Researching Older Adult Motivations

Information for Participants

Please read this information sheet carefully before deciding if you would like to take part

Exciting new study – information for participants

1. Are you aged 65 or above?

2. Are you starting /recently started to walk with a 'Paths for All' (PfA) walking group?

If you answered yes to these questions then you are an ideal candidate to help with this study. I am delighted that you are considering taking part. My name is Nicky Laing and I'm a PhD researcher with the University of Edinburgh. I am planning a study called WE: ROAM which will explore what motivates adults in your age group to walk with walking groups. We will be collecting information at 3 time points: when walkers join a group, at 6 months and at 12 months.

My research team is interested in the characteristics of people in this age group who walk. We want to know more about the motivations and reasons why people decide to participate or drop out, and the different feelings they have when walking. We want to know more about this because we need to encourage people in this age group who are inactive to walk more. Motivation is a big topic, so this study is only looking at one aspect of it. The information you provide in this study will help to contribute to this important field of research.

If I choose to participate what will I be asked to do?

1. You have been asked by the walk coordinator/ walk leader to complete the postcard providing your contact details (could you please do that now and hand to the person who gave you this letter). Your contact details will remain confidential and forwarded to me. The only people who will see these are the research team, the walk leader/coordinator and a central PfA coordinator who will send me your postcard. Your details will not be subsequently shared with anyone else!
2. Alternatively, if you would like to take this letter and postcard home now, you can complete the postcard and return it at a subsequent walk, or telephone/email me directly – see my contact details below.
3. Once your contact details are forwarded to me, I will telephone you at your preferred time and check that you still want to take part.
4. If you are happy to proceed, I will gain your spoken agreement to take part (verbal consent) by reading out a consent statement which I will record using a mobile phone app. I will also seek consent to contact you again in six and 12 months time. I am keen to record your answers to the same questions if you stay or stop walking with the walking group. I will then switch off the recording device.
5. I will then read you the questions from the questionnaire and note your answers. Completion should take approximately 15 to 20 minutes.
6. I will finally thank you (heartily!) and confirm that I will call again in six months time.

Are there any risks being involved with this study?

There is a very small chance that a few of the questions may cause a sense of unease, especially if you have health conditions, however it is unlikely. You can to stop answering your questionnaire, miss questions out or withdraw from this research at any time.

Are there any benefits being involved in this study?

As a thank you for taking part in the study, everyone who provides answers to all three questionnaires will be entered into a draw for a gift such as High Street vouchers provided by PfA. You can also benefit from the knowledge that your participation will really contribute to this essential field of research. Unfortunately people in your age group are some of the least active in the general population. What we learn from people like you will be invaluable in the search for solutions to encourage people to sit less and walk more.

How will the information be used?

Only the research team will have access to your responses to the questionnaires, so your answers will remain confidential. All information provided by you, including consent, will be stored at the University on secure computers for 5 years and then safely deleted. The information you provide will form part of the overall study findings, but your personal details will be removed. These findings will be shared with the project sponsor and form part of my academic work (such as within my written thesis, presenting at conferences and published in journals). You will not be identifiable from these findings.

Contact details:

If you would like more detailed information about the study, or have any questions or enquiries at anytime before, during and after the study please feel free to contact me: Nicky Laing (E-mail: nicky.laing@ed.ac.uk; [redacted]). Alternatively, please contact my supervisor ailsa.niven@ed.ac.uk

THANK YOU FOR YOUR HELP AND SUPPORT!

Appendix Three – WE:ROAM information sheet for walk leaders/coordinators

Information pack for Walk Co-ordinators/ Walk Leaders

What is the WE:ROAM study?

The WE:ROAM study is a shared piece of research between Paths for All (PfA) and the University of Edinburgh. As new walkers aged 65 and above join a PfA walking group, they will be asked to take part in the study. If they agree, they will be asked to complete a telephone questionnaire. It will measure the different types of motivation that encourage older adults to initially start walking with PfA groups. They will be contacted again at six and 12 months and asked to complete the same questionnaire. This will determine if motivation levels have changed for people who have either stayed or stopped walking with their group. The information sheet supplied in this pack provides details of the full recruitment process.

How can you support this research?

We are looking to recruit as many eligible new walkers at PfA walking groups throughout Scotland as possible. As a coordinator or walk leader of these walking groups, you could play a crucial role in helping to promote the research to all new walkers joining your groups.

By actively asking new starts to take part, and providing them with the information sheet and postcard for contact details, you will be really helping to include as many people as possible. Your support with this will be very gratefully received. A key success factor for this study will depend on the numbers we manage to recruit and keep on the study for the three time periods. Once participants have signed postcards and provided contact details, it would be especially helpful if you could forward on those details either by phone or email so I can telephone them as soon as possible.

What can we do to help you promote this research?

This information pack provides you with all of the key documents for inviting new walkers to take part:

- This covering letter (for you to keep)
- A copy of the participant information sheet
- A copy of the postcard for participants to sign and provide contact details
- A cue card (for you to keep) containing information for you to share with participants to support recruitment

As the researcher, I am happy to come along (when possible) to training/update sessions for your walk leaders to promote this research project and answer further questions. My contact details are provided below and I would welcome calls or emails to answer any issues you may have.

When does this research start?

The study is now live, so please share this information and hand out the participant information sheets, postcards and cue cards to those who liaise directly with new walkers at your groups. The study will recruit on a rolling basis, so there is not a fixed start date. However, the sooner walk leaders are in a position to start recruiting, the better, as we need to maintain contact with participants for a year.

A gesture of thanks for your support

We recognise that helping to recruit for this study adds an additional task to your role. As a thank you, coordinators and walk leaders who proactively support the project, and are successful in recruiting participants to the study, will be entered into a prize draw for High Street vouchers. The coordinators and walk leaders who took part in the pilot study were very proactive in their support. They believe in the benefits of attending a walking group and are interested to learn more about what motivates people to start, stay and what demotivates them to stop continuing, especially in their location. We hope you will be enthusiastic about it too. We cannot share individual responses, but will be able to provide general, anonymised feedback relating to your area. Pilot participants were also more likely to take part if they understood they were contributing to this essential field of physical activity research. The information on the cue card will help with this.

Next steps

- Participant information sheets, postcards and cue cards have been sent to you with this information pack. The information sheet and postcards are for new walkers, the cue cards are for you and your walk leaders who sign up new walkers. These three items need to be handed over to your walking groups. Copies of these three items will be added to the PfA website
- A postcard and information sheet should be handed out to every new walker when they receive their new walker registration form. New walkers should be encouraged to complete the postcard first and then read/take away the letter.
- Could you please encourage those collecting completed postcards to email or phone through contact details for participants to me as this will speed up contact. Completed postcards should be sent back to PfA (Danielle Magee) with the new walker registration forms.
- I would be grateful if you could encourage those in your teams who liaise directly with new walkers to be enthusiastic about the research to new walkers and promote participation (see cue card).

THANK YOU FOR YOUR SUPPORT WITH THIS RESEARCH

Nicky Laing, PhD researcher,
Physical Activity for Health Research Centre (PAHRC),
Institute of Sport, PE and Health Sciences, St Leonard's Land, Holyrood Road,
The University of Edinburgh
nicky.laing@ed.ac.uk; [redacted]

Appendix Four – WE:ROAM postcard for participants

Exciting new **WE: ROAM** study: University of Edinburgh

Walking Experiences: Researching Older Adult Motivations

Can you please help to contribute to this important field of research?

Are you aged 65 or above? Would you like to be included in an exciting new walking study by researchers at the University of Edinburgh? Physical activity levels among most adults who are 65 plus are chronically low. What we learn from people like you who are striving to remain active will help us address this. We would like to contact you and complete a telephone questionnaire at three time points: now, in six months and a year.

What is the research about?

We are interested in what motivates adults in your age group to start, and continue, walking in walking groups. Everyone who completes three questionnaires will be entered into a prize draw for Vouchers.
If you think you can take part, please complete your contact details in the space below and hand this postcard back to the coordinator/walk leader now. It will be forwarded to me so I can call you. Please then read the attached information sheet for more background information (or take it away and read it at your leisure).

Contact details:

Name .....

Phone numbers .....

Email .....

Convenient day / time .....

Appendix Five – Verbal consent script for the WE:ROAM study

The **WE:ROAM** study verbal consent form

Walking **E**xperiences **R**esearching **O**lder **A**dult **M**otivations

---

I need to record your verbal consent to take part in this study because I will be collecting information from you on the telephone. I have switched on the tape recorder and will record this part of our conversation only.

Please listen to the following four statements, and if you are happy to continue, I will ask you to please state your name, your date of birth, and todays date which I will write down.

1. I have read the information sheet provided to me by the recruiter and have asked any relevant questions. These have been answered to my satisfaction, and I would like to take part in this study.
2. I understand that my involvement is voluntary and I can withdraw at any time without suffering any consequences.
3. I understand that if I complete the questionnaire, my answers will be kept confidential amongst the research team listed below. Any findings from this research will be shared with the project sponsors and may be published in a research journal, or shared at a research conference. However, any details relating to me will be removed so I remain anonymous.
4. I understand that a synopsis of my feedback will be made available on request.

Name……..

Date of birth……**Todays date**……

Contact details……..

Research team:

Mrs Nicky Laing: PhD student, University of Edinburgh (nicky.laing@ed.ac.uk

Dr Ailsa Niven: PhD supervisor, University of Edinburgh (ailsa.niven@ed.ac.uk)

Dr Sam Fawkner: PhD supervisor, University of Edinburgh (s.fawkner@ed.ac.uk)

Appendix six – WE:ROASE study ethics approval

THE UNIVERSITY of EDINBURGH
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Ref: 2339

Date: 29th May 2019

Dear Nicky,

Title: The WE:ROASE study - Walking Experiences: Researching Older Adult Social Experiences

The School of Education and Sport Ethics Sub-Committee has now considered your request for ethical approval for the studies detailed in your application.

This is to confirm that the Sub-Committee is happy to approve the application and that the research meets the School Ethics Level 2 criterion. This is defined as "applies to non-intervention research where you have the consent of the participants and data subjects. This may include, for example, analysis of archived data, classroom observation, or questionnaires on topics that are not generally considered 'sensitive'. This research can involve children or young people, if the likelihood of risk to them is minimal".

A standard condition of this ethical approval is that you are required to notify the Committee, of any significant proposed deviation from the original protocol. The Committee also needs to be notified if there are any unexpected results or events once the research is underway that raise questions about the safety of the research.

Should you receive any formal complaints relating to the study you should notify the MHSE Ethics Committee immediately by email to MHSEthics@ed.ac.uk

Yours sincerely,
Ben Scullion

On behalf of:
Dr Ailsa Niven
Convener, School Ethics Sub-Committee

Appendix Seven – Focus group schedule for the WE:ROASE study

Focus group schedule

Stage one of the focus group: welcome/settle participants after the walk. Make sure everyone has refreshments – tea/coffee/water/cold drinks & snack. Hand out consent forms, get them completed and gather completed forms.

Stage two of the focus group: gathering answers to questions about the social reasons for walking with the group during the initiation phase:

Switch on the tape recorder. Give an explanation of the initiation phase – beginning to walk from day one up to around 6 months – explain this is my definition and they might have different views. I want to capture social reasons during the early phase of walking

1. What were the social reasons that were important to you during the initiation phase of group walking? (discuss in groups initially or individually – allow 5/10 mins for this) then ask and record answers on this question
2. Were some more important within the six month phase? When did they become important during the initiation phase? Ask and record answers to these questions

Stage three: gathering answers to questions about the social reasons for walking with the group during the continuation phase:

Give an explanation of the continuation phase – six months and beyond – explain this is my definition and they may have differing views

1. Once you had been walking for six months, did the social reasons for walking with the group stay the same? Change? Or did new social reasons occur?

Stay the same - record answers

Change/develop – record answers

2. When did the changes/developments start to happen? Was it six months? – record answers

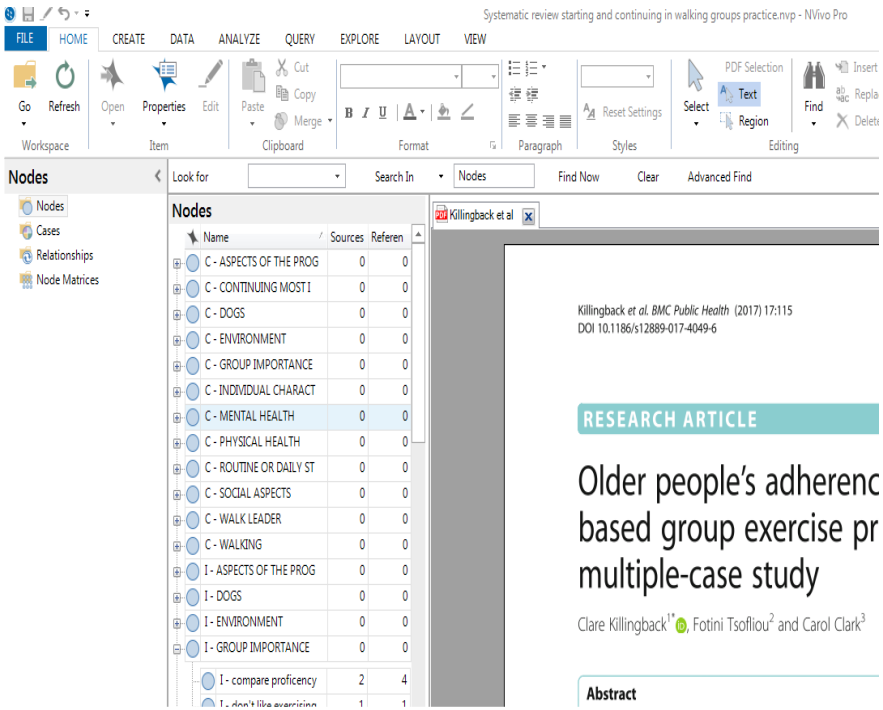
New reasons – record answers

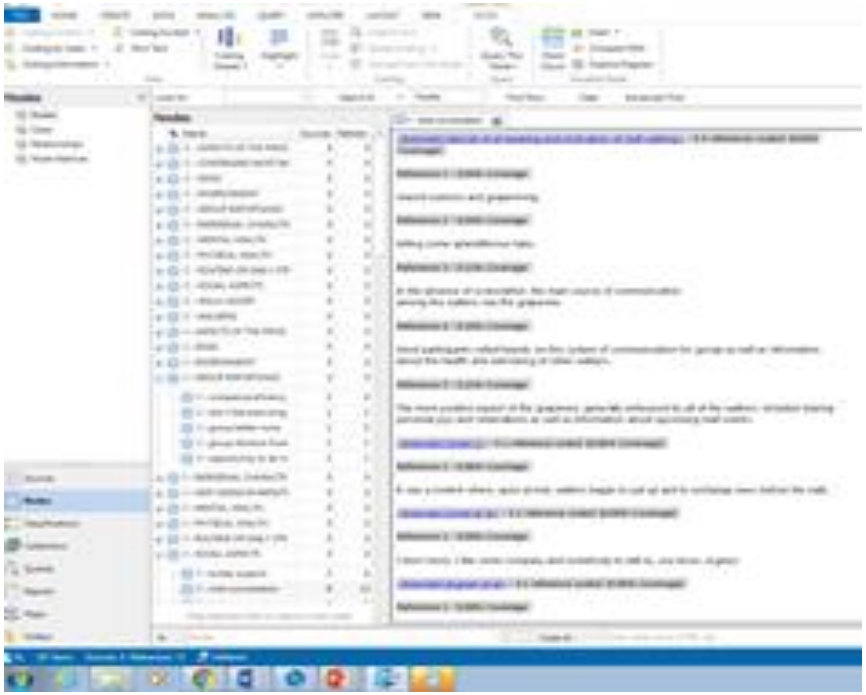
3. When did new reasons start to happen? Was it six months? – record answers

Stage four: Thanks, what I do next with the information and good-byes

Appendix Eight a) Systematic review analysis process including the development of codes from text, creation of sub-themes and themes

Image bottom left – Screenshot of Nvivo 11 software depicting nodes, sub-themes and themes from Killingback et al., 2017. Image bottom right identifies the link between text and node development for Killingback et al., 2017





Appendix Eight b) Thematic sysnthesis transcription process: examples from Killingback et al., (2010)

Text	Coding	Sub-theme	Theme	Context
"The exercise helped participants maintain their health, manage chronic health conditions and prevent health problems"	• Maintain health • Manage chronic health conditions • Prevent health problems	Protect health/manage health conditions	Physical health	Individual (continuation)
"Although it was noted that it took time to get to know people and build friendships, but as the months went on, they felt more at ease with each other…which led to the development of new friendships	• Get to know people • Took time to get to know people • More at ease with each other • Development of new friendships	Companionship/ friendship/new friends	Social aspects	Social (continuation)

“Specifically, the features of the instructor in relation to participant adherence included the instructor’s personality, their professionalism and humanised approach”	• Instructor personality • Instructor professionalism • Instructor human approach	Persona of the walk leader(expert, professional, enthusiastic, maintains safety)	Social – characteristics of the walk leader	Social (continuation)
“Participants appreciated exercising as a group as opposed to their perceived impression of the lone nature of individual gym programmes, where nobody talks to you…intimidating”	• Appreciated group exercise • Not alone • Lonely exercising alone in gym • No body talks to you (gym) • Intimidating (gym)	Benefits of the group: friendlier, not alone, distracting from exercise	Environment – the importance of the group	Environment (continuation)

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